

Independence and Mental Wellbeing (including social and emotional wellbeing) for older people

Review 1: What are the most effective ways to improve or protect the mental wellbeing and/or independence of older people?

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Executive Summary

Background

The mental wellbeing and independence of older adults is a relevant public health issue, with the proportion of the population in the UK over the age of 60 expected to be more than 25% of the population within a generation. Previous research in this area has recognised common mental health promoting factors, as well as protective and risk factors for mental ill-health (such as depressive disorders) among the ageing population. For example, the connection between various aspects of mental well-being and available social resources in later life has been emphasised in previous research ((Nyqvist et al. 2013). The risk of social isolation and loneliness can increase with age and can have a detrimental impact on current and future physical and mental wellbeing and independence (Cattan et al. 2005, Dickens et al. 2011, Shankar et al. 2013). Longitudinal surveys of loneliness across northern Europe suggest that between 8% and 11% of people over the age of 65 perceive themselves to often or always be lonely (Victor and Bowling 2012).

Much of the focus has been on taking action to help support the independence of older people who are already in a fragile state and living with complex chronic health problems and mental disorders such as dementia and depression. Adding to this approach, there is now an increased focus on enhancing healthy and active ageing, including the targeting of intervention to healthy independent older people (Walker & Maltby, 2012). The review focuses on this issue looking at actions to promote and maintain the mental wellbeing and independence of the general healthy older people, rather than focusing on helping those older people who are already living in a state of poor health.

The review focuses on mental wellbeing rather than mental disorders and it is clear that mental well-being is a complex subjective state with no one single agreed definition of this concept. Instead, there is a variety of dimensions that have been highlighted in the literature, as well as a diversity of tools to measure these dimensions. Because of the contested nature of the mental well-being concept, the lack of an in-depth discussion on its implications for older people, and the diverse measurements used to assess it, this review aim to adopt a pragmatic approach by including any initiative or intervention that targets and aims to measure the positive end of the mental health spectrum, including life satisfaction, quality of life,

happiness, mastery, empowerment, capability and positive functioning, as well as social resources.

Aims of the review

The aims of the review therefore are to assess the effectiveness of interventions to improve the mental wellbeing and/or independence of people aged 65 and over, who are community-dwelling and do not have substantial health and social care needs.

A broad range of activities fall within the scope of the review, including interventions to raise awareness of the importance of older peoples' mental wellbeing and independence, as well as to improve knowledge of information and support on access to services to support mental wellbeing and independence among professionals, older people, their carers, families and the wider community. Actions to promote and maintain the social networks of older people, including the use of new communication technologies as important tools for health promoting initiatives are covered as well as psychological interventions delivered to promote mental wellbeing by, but not the use of these interventions for the treatment of mental disorders.

Research questions

The overarching question addressed in this review is

1. What are the most effective ways to improve or protect the mental wellbeing and/or independence of older people?

Supplemental questions that are addressed focus on specific types of intervention and/or target population groups. In some cases the relevant target groups are not older people but those that come into contact with them such as any paid or unpaid carers, as well as health and social care professionals.

Methods

A systematic literature review of effectiveness evidence to address the above review questions was undertaken. A wide range of databases was searched systematically, supplemented by identification of grey literature and snowballing of citations in papers identified through the electronic review. Screening of titles and abstracts was conducted independently in duplicate. Data was extracted by one reviewer and checked by a second with disagreements resolved as a group. Searches were carried out in March and April 2014 to identify relevant studies in the English language published between 2003 and 2013 inclusive. Additionally, relevant studies were identified through citation tracking of included papers and snowballing of references identified. All intervention studies of any design were included and from any country context.

Results

86 studies were included in this review covering a number of different types of activity, and 20 evidence statements related to 6 identified themes have been drafted. 9 papers from the UK covering 7 studies, as well as 2 from the Republic of Ireland have been included in this analysis but most of the interventions and activities discussed are feasible to implement in a UK context. The interventions come from many different countries around the world, but are dominated by US set studies. The majority of interventions identified are associated with actions to improve or protect mental wellbeing. There is less focus in the review specifically on interventions to maintain independence, perhaps because many interventions in this area are targeted at individuals who are already at risk of a loss of independence because they are already living with poor physical and mental health. The discussion section of this review also notes a number of different studies which have fallen outwith the scope of this review for various reasons including this focus on people already living in poor health, as well as a lack of measurement of impacts on positive mental wellbeing. Nonetheless potentially these excluded studies provide further examples of actions to help promote mental wellbeing and independence of older people, given that they use similar types of intervention to those that have been identified.

The review indicates that there is promising evidence, albeit often from weak study designs, that various forms of social resources are beneficial for maintaining the mental well-being and independence of healthy older people. These include improving access to social contacts

and networks and participation in social activities, including various arts and cultural activities, initiatives to sign post individuals to activities and friendship building programmes. Volunteering, which may be intergenerational in nature, for instance working with children and young people, is another area where evidence has been identified. Intergenerational activities have been seen as one way of reducing isolation, while at the same time they can also help to challenge negative attitudes towards older people and ageing in society. Participation in university and other education beyond retirement age is another potential intervention. Some of these educational activities can be delivered remotely, for instance over the internet. More generally there is also an evidence base looking at the potential role that can be played by information communication technologies in enhancing mental wellbeing and independence. These types of activity can be broken down into two broad categories – training and support to make use of new technologies such as computers, the internet and other devices like gaming consoles and tablets – and communication making use of different technologies including the telephone. The review found little specifically on tackling ageism and effective ways of identifying at risk groups, nor information on effective ways of commissioning services, although it can be noted that potentially useful material in this respect has been flagged up for a second review on barriers and facilitators to promotion of mental wellbeing and independence. It is also clear from the evidence statements and the detailed tables in the appendix that a great number of different outcome measures are used to look at mental wellbeing and independence, making it impossible to produce any meaningful type of meta- analysis. Another noteworthy finding of this review is that most of the study populations are heavily dominated by women; only two of the 85 studies included more men than women.

The evidence statements that follow have been clustered around six suggested themes, with each theme containing a number of evidence statements. The very broad set of interventions that are described here are not always easy to cluster and it should be recognised that these might be grouped in different ways to those set out here, and some potentially are overlapping. The clusters used are:

- 1. Participation in social activities and support**
- 2. Intergenerational activities and volunteering**
- 3. Friendship programmes**
- 4. Participation in further and continuing education beyond retirement age**
- 5. Self management activities**

6. Use of computers and other information and communication technologies

Evidence statements

Cluster 1: Participation in social activities and support

Evidence Statement 1.1: Multi-component multi-location social support interventions

There is inconsistent evidence from three studies on the effectiveness of multi-component interventions on the mental wellbeing and independence of older people: 1 RCT, 1 quasi experimental study, 1 exploratory uncontrolled before and after study (Saito 2012 +, Honigh-de Vlaming 2013 +, Bartlett 2013 -). Moderate evidence from a multi-component intervention targeted at older migrants in Japan (**Saito et al. 2012 +, RCT, Japan**) reported a significant positive effect on subjective well-being ($p = 0.039$), social support ($p = 0.013$) and loneliness ($p = 0.011$).

One Dutch study found moderate evidence that a multi-component healthy ageing programme, including a mass media and information campaign, had a positive impact on loneliness literacy. (**Honigh-de Vlaming 2013 +, quasi-experimental study, Netherlands**). At 2 year follow-up, the intervention group scored more favourably than controls on loneliness literacy subscales: (relative effect size -4.4% , $p < 0.05$) perceived social support mean scores (relative effect size -8.2% $p < 0.05$) and subjective norm mean scores (relative effect size -11.5% , $p < 0.05$). However there was no significant impact on loneliness or actual social support levels at two-year follow up

One weak exploratory uncontrolled pilot Australian study examining different multi-faceted programmes (including fitness and arts programmes, community forums, a volunteer buddy system and culturally appropriate volunteers showed no impact on loneliness and social support (**Bartlett 2013 -, UBA, Australia**).

Although these studies were conducted outside of the UK, multi component healthy ageing initiatives are available in the UK; the applicability of programmes would

need to be assessed on a case by case basis. All of these interventions were targeted at healthy older people, although some components of programmes were targeted at people with mild levels of depression.

Evidence Statement 1.2: Participation in single location, multi-component activity programmes

There is consistent evidence from 2 weak small uncontrolled before and after studies (Mehta 2004 -, Rosenbaum 2009 -) to indicate that there may be benefits to mental wellbeing associated with the participation of older people in multiple activities that are organised in fixed locations, such as cafes and older people's activity centres. One potential additional limitation was the low rate of participation of men in these programmes.

Rosenbaum et al 2009 -, UBA, USA reported that 30% of customers surveyed at a not for profit café offering activities such as weight-lifting, yoga, art, computer classes and volunteering opportunities, experienced restoration (a reduction in mental fatigue and an improvement in mental wellbeing). Individuals who volunteered in the café were more likely to have high levels of restoration than those that did not achieve restoration) $P < 0.001$). **Mehta 2004 -, UBA, Singapore** looked at the psychological well-being of 12 older adults aged 60 and older who participated in many different activities at a senior centre activity programme. Life satisfaction and happiness improved in people who had attended for more than 18 months there was no improvement in people who had attended for less than 6 months (new members). (No statistical analysis reported).

While both of these studies are from outside the UK these types of multi-component interventions can be seen in a UK context.

Evidence Statement 1.3: Mentoring for older people and signposting to activities

There is inconsistent evidence on the mental well-being benefits to older people

receiving mentoring support, including signposting to activities and services from trained adult volunteers in 1 uncontrolled before and after study and 1 non-randomised controlled study (Greaves 2006 -, Dickens +).

There is weak evidence in the UK from (**Greaves 2006 -, UBA, UK**). This study reported that mentoring by trained adult volunteers led to significant improvements in reported levels of social support at 12 month follow up ($p=0.02$) and in mental health at 6 month follow up ($P < 0.005$), but at 12 month follow up these improvements were no longer significant. Moderate evidence from one larger scale non-randomised controlled study of the same intervention (**Dickens 2011 +, NRCT, UK**) at 6 month follow up reported no impact on mental wellbeing and no evidence of any difference in social support outcomes with the exception of one measure, 'getting along with others' which deteriorated in the intervention group.

Both studies were conducted in the UK; it should be noted that in both evaluations the study population had poorer mental health and physical health status than the general population of older people. The interventions may also have been implemented in an inconsistent way by different community mentors which may also have impacted on outcomes.

Evidence Statement 1.4: Educational health promotion interventions delivered by volunteers and peers

There is weak evidence from two uncontrolled before and after studies (Collins et al 2006 -, Malekafzali 2010 -, that volunteer and peer delivered educational health promotion programmes can positively benefit the mental wellbeing and social participation of older people.

Collins and Benedict 2006 (-), UBA, USA evaluated the effectiveness of an educational health promotion intervention delivered to 339 people (mean age 73.20) at day centres for older people and retirement housing villages in Nevada, USA. There were significant improvements in Mastery Scale scores ($t= 12.08$, $df = 323$, $p < 0.001$). Loneliness also decreased ($t = 29.20$, $df = 329$, $p < 0.001$).

Malekafzali et al. 2010 -, UBA, Iran assessed the effectiveness of community volunteer delivered health promotion knowledge to 101 older people (59% aged between 60-and 69 and 41% aged 70 plus) in the community through different mechanisms including home visits and face to face education events and referrals to physicians. After 9 months there were significant increases in women aged 70 and older, not being worried about the future ($p= 0.004$), and more women aged 60-69 being happy most of the time ($p=0.01$). Happiness also improved for men ($p=0.05$) and there was a significant increase in participation in group activities and clubs among women ($p=0.00$).

While these programmes are delivered outside of the UK, health promoting initiatives delivered by volunteers can be implemented in a UK context. The majority of participants in both studies were women, less is known about their impact on men.

Evidence Statement 1.5: Participation in a singing programme

There is evidence from four studies on the impact on mental wellbeing of participating in choirs and other singing groups. There is strong evidence from **Coulton et al 2015 (++)**, **pilot RCT, UK** that participation in a 14-week professionally led community choir group has a positive impact on mental wellbeing. 131 of 258 people over the age of 60 (mean age 69.2, 84% female, 98% white) were allocated to singing groups with the remainder in a waiting-list control group. At 6 month follow up there was a significant improvement in SF-12 mental health component scores of 2.35 $p<0.01$ for the intervention group compared to the control group.

There is moderate evidence from **Cohen et al 2006, 2007 (+)**, **quasi-experimental study, USA**, on the positive impact of regular participation in a professionally conducted choral group on the mental wellbeing of 90 community dwelling older people (mean age 79, 78% female, 92% White). At 12 month follow up a significant difference in morale was seen with less deterioration in the intervention group $t(125) = -1.92$; $p<0.06$. This was maintained at 2 year follow up (**Cohen et al 2007 +**). The

comparison group also reported a more significant decrease in weekly activity than the intervention group $t(140) = -4.62; p < 0.01$.

There is weak evidence from an eight-week singing programme (**Davidson 2013, -, UBA, Australia**) that participation in a singing group was not associated with statistically significant improvements in positive mental health or reductions in loneliness.

One of these programmes evaluated (**Coulton et al 2015 ++**) is delivered in the UK in more than 40 locations; other voluntary sector delivered group singing programmes are also found in the UK

Evidence Statement 1.6: Using a national arts festival celebrating creativity in older people

There is weak evidence from an exploratory study in the Republic of Ireland that evaluated a national arts festival attracting 100,000 people called Bealtaine, that celebrated creativity in older people each year (**O'Shea et al 2012, -, exploratory and cross sectional survey, Ireland**). Nearly 90 % of participants found that participation in Bealtaine improved their quality of life, as well as encouraged their personal development in terms of enhanced learning and organisational skills. Furthermore, more than 90% of older participants reported in surveys that social contacts were increased and over 80% said that they had better engagement with the local community.

Such an arts festival could be implemented in a UK context; arts and health projects for older people, including cultural events, have been delivered in the UK.

Evidence Statement 1.7: Using arts to promote and protect mental and wellbeing

There is consistent moderate evidence from 10 papers covering 9 studies (Bedding 2008 -, de Medeiros 2011 +, Eyigor 2009 -, Creech 2013/Hallam 2014 +, Haslam

2014 -, Lee 2010 ++, Seinfeld 2013 +, Sole 2010 -, Travers 2011-,) supporting a range of different art and music related interventions in promoting and protecting the mental wellbeing of older people. These studies are in addition to the evidence seen on participation in professional choirs seen in evidence statement 1.5 and participating in an arts festival in evidence statement 1. 6.

There is evidence from **Lee 2010 ++, RCT, Hong Kong**. This explored the effects of a music listening intervention using MP3 players on the quality of life of 70 community dwelling older adults (mean age 76) reporting significant improvements in vitality, social functioning, emotional role and mental health after 4 weeks ($p < 0.006$). **Travers and Bartlett 2011 (-), UBA, Australia** which looked at the impact of a nostalgic radio station on older listeners mood (mean age 79), loneliness and quality of life. While there were no significant changes in loneliness or social isolation, there were significant improvements on the Quality of Life- Alzheimer Disease scale. **Haslam and colleagues (2014) (-), RCT, Canada** examined the effectiveness of novel forms of song-based reminiscence compared to story reminiscence for 40 people (mean age 85.5 to 88.5 in 3 groups). There were significant increases in life satisfaction after 6 weeks: secular singing group ($p = 0.005$), religious song group ($p = 0.018$) and story reminiscence groups ($p = 0.01$).

Creech 2013/Hallam 2014 +, quasi experimental study, UK explored how participation in making music might support the social, emotional and cognitive wellbeing of older people. Findings suggest those actively engaged in making music exhibit higher levels of wellbeing than those engaged in other group activities (effect sizes ranging from 0.11 to 0.19). **Seinfeld 2013 +, quasi-experimental, Spain** evaluated the impact of weekly piano lessons and daily training on cognitive function, mood and quality of life in 13 older adults (60+). Quality of life outcomes increased compared to controls but the study was not powered to test statistical significance.

Sole et al 2010 (-), UBA, Spain, examined the impact of different types of music activities (choral singing, music appreciation classes and preventive music therapy) on quality of life of 83 healthy older adults (83% women, mean age 72.6). Non-significant improvements in new friendships, self-satisfaction, perceived usefulness

and optimism were seen in all three groups. **Eyigor et al (2009) (-), RCT, Turkey** examined the impacts of group-based Turkish folklore dance for healthy women aged 65 and over. Over 8 weeks, there was a significant improvement in mental health in the dance group ($p < 0.05$). There were no significant differences in vitality, social functioning and emotional role.

de Medeiros et al. 2011 (+), RCT, US assessed the effectiveness of a structured autobiographical writing workshop on autobiographical memory, mood and self-concept in older adults. 51 older adults (age range from 67–96 years) were randomly assigned to one of three groups: an autobiographical writing workshop and two control groups – a reminiscence group or a no-treatment control group. Findings indicated that self-ratings of overall well-being decreased over time across groups, but the authors did not believe that the study had a detrimental impact on participants.

In a small qualitative study **Bedding and Sadlo (2008),-, exploratory observational pilot study, UK** 6 older retirees (aged 65 to 84) were interviewed about their experiences in community art classes. The participants described painting as enjoyable, rewarding, satisfying and relaxing. It brought a sense of achievement and boosted their confidence and helped them to manage negative emotions. It also helped to socialise with other people as a social club.

All of these music and art interventions potentially could be delivered or adapted for delivery to a UK context.

Evidence Statement 1.8: Support for older caregivers

There is weak but consistent evidence from 7 studies: 2 RCTs, 1 quasi-experimental study, 3 uncontrolled before and after studies and 1 cross-sectional survey (Boise 2005 -, Ducharme 2012 +, Ducharme 2011 +, Greenfield 2012 +, Mui 2013 -, Savundranayagam 2011 -, Won 2008 -) that psychosocial educational interventions delivered through a variety of programmes to support older people who have informal family caregiving responsibilities, largely when caring with for people with dementia,

can promote or protect their mental wellbeing. In addition an exploratory feasibility study on the use of music therapy to help family caregivers with relaxation, comfort and happiness suggests this intervention merits further evaluation Hanser et al 2011 (-).

Ducharme 2011, (+), RCT, Canada and **Ducharme 2012 (+), RCT, Canada** evaluated the effectiveness of a psychoeducational programme that can be delivered by lay people to help new caregivers adapt to their new role. In the 2011 study following intervention caregivers had significantly improved confidence in dealing with caregiving situations ($P < 0.001$) and better self-efficacy ($P < 0.001$). In the 2012 study caregivers had improved confidence in their ability to care ($P < 0.005$) while improvements in self efficacy tended to significance ($P < 0.06$).

Boise et al 2005 (-), UBA, USA that also evaluated an educational programme to empower family caregivers, reporting significant positive changes (in the desired direction) in emotional well-being at initial follow up and 6 months later.

Savundranayagam et al 2011 (-), quasi-experimental study, USA looking at the same programme found significantly lower levels of stress burden and objective burden at 6 weeks in the intervention group (unquantified). **Won 2008 (-), uncontrolled before and after, US** found significant improvements in caregivers psychological wellbeing ($p < 0.001$).

Hanser et al 2011 (-), uncontrolled pilot feasibility study, USA looked at a different type of intervention: the impact of a caregiver-administered music programme for family members who have dementia in an exploratory feasibility study. Caregivers rated an improvement in their own relaxation, comfort and happiness following the use of the music programme.

Mui 2013 (-), uncontrolled before and after study, US which provided support for Chinese caregivers and a survey analysis by **Greenfield 2012+, US** of the impacts on caregivers of participating in volunteer and education programmes also found improvements in self reported mental wellbeing (both unquantified).

Although these studies were all conducted outside of the UK, the interventions could be delivered in a UK context and one of the manualised support programmes for caregivers is being trialled in a UK context.

Cluster 2: Intergenerational activities and volunteering

Evidence Statement 2.1: School-based intergenerational activities

There is moderate consistent evidence on the effectiveness of school-based intergenerational social activities linking children and young people with older people in improving the mental wellbeing of older people from 3 studies, 1 RCT, 1 quasi-experimental study and 1 qualitative study (de Souza 2007 ++, Fujiwara 2009 +, Herrmann et al 2005 +).

One RCT (**de Souza 2007, ++, RCT, Brazil**) of 266 older people (149 group participants and 117 controls) indicates that intergenerational small group-based activities led by teachers and delivered in the school setting can lead to improved family relationships 4 months after intervention ($p=0.03$). One controlled before and after study (**Fujiwara 2009 +, quasi-experimental, Japan**) found evidence that intergenerational contact, involving older volunteers reading to children enlarged the social contacts of older people with non-related children ($p<0.001$). Further, there is evidence from a quasi experimental study (**Herrmann 2005 +, quasi-experimental, US**), involving 66 older people trained to provide life-skills training to high-school students. This study reported improved psychosocial development.

All of these studies were conducted in settings outside of the UK making it difficult to assess their applicability as a whole to a UK context, but intergenerational activities involving older adults volunteering in schools can be found in a UK context.

Evidence Statement 2.2: Intergenerational activities involving children outside of the school setting.

There is weak but positive evidence on the effectiveness of intergenerational social activities involving young children interacting with older people outside of the school setting in improving the mental wellbeing of older people in 3 studies (Kamei 2011 -, Marx 2005 - and Morita 2013 -).

Kamei et al. 2011 (-), quasi-experimental study, Japan evaluated the effects of the intergenerational interactions between older women (average age 75.6) and school-aged children as part of an intergenerational day program (IDP) which included a range of intergenerational group activities, such as communication facilitation games and handicrafts. In terms of health-related quality of life at 3 months and 6 months post programme compared to a separate volunteer group the older adults had significantly improved mental health ($F [2.26] = 4.00, p = 0.030$).

There is evidence from an observational study (**Morita 2013 -, UBA, Japan**) of an intergenerational program targeting preschool children and older adults that intergenerational conversation was significantly higher in the socially-oriented programme group (i.e. the participants playing games together) than in the performance-based programme group (i.e. children singing or dancing; $p < 0.001$, no specific figures provided)

Marx et al 2005 (-), quasi experimental study, USA examined the usefulness of an intergenerational email pen-pals programme and an intergenerational face-to-face visiting programme for community dwelling older adults aged 80 to 86. At post-test after 6 months, regarding social network outcomes, 26% of those in the email pen-pal programme stated that they would like to continue to contact their pen-pals, while 74% were not interested.

All of these studies were conducted in settings outside of the UK making it difficult to assess their applicability as a whole to a UK context. Two of the studies were set in Japan where cultural values, including Confucianism, mean that children are taught to

place value and respect on their elders, something that may not have the same resonance in the UK.

Evidence Statement 2.3: Intergenerational activities: volunteering

There is weak but consistent evidence from 5 studies that intergenerational social activities that involve volunteering by older people can be effective; 1 quasi-experimental study, 3 uncontrolled before and after studies and 1 qualitative study (Bernard 2011 -, Cook 2013 -, Mui 2013 -, Power 2007 -, Scott 2003 -).

Bernard 2011, - (UBA , Canada) examining the effects of an intergenerational telementoring program reported positive behaviour changes for older mentors in terms of their self-confidence, self-expression, enjoyment and self-efficacy. **Mui 2013 – (uncontrolled before and after study, US)** used a survey to explore the effect of a programme training older Chinese immigrants to provide emotional support and coping skills over the telephone – in Mandarin or Cantonese at least once per week to other older Chinese caregivers. All volunteers felt empowered and happier, while 67% felt better about themselves.

Cook 2013, - (UBA, UK) looked at the impact on loneliness and mental wellbeing of 30 older volunteers who were trained and supported to establish hen houses and then deliver hen-related activities to less able older people, friends/relatives, care staff/managers and school children. There was a significant increase in wellbeing at 9 month follow up ($p < 0.000$) but no significant change in loneliness.

There is also evidence from a quasi-experimental study used to look at how volunteering impacted on the levels of generativity in people over the age of 60 (**Scott 2003 -, quasi experimental study, USA**). 53 volunteers were compared with 29 non volunteering older people. Although volunteers had a relatively high mean level of generativity, the only significant differences ($p < .05$) were found to be between volunteers involved in various miscellaneous tasks (who had the highest levels of generativity), on the one hand, and those involved in the delivery of meals as well as the non-volunteer groups (who were the two lowest groups on generativity).

In the USA, in a very small qualitative study **Power 2007 et al (-), qualitative ethnographic study, USA** looked at the impact of volunteering to provide help to adopted and fostered children and/or younger generations for 6 hours per week in return for a rent reduction. Interviews with the 2 participants indicated that intergenerational action brightened up their lives, raised their spirits, helped them to find purpose of life and increased their sense of self-worth.

The Cook 2013 (-) study was implemented in the UK. All of the other studies were conducted in settings outside of the UK making it difficult to assess their applicability to a UK context. It may be difficult to replicate the planned community to support adopted and fostered children in the Power study in a UK context.

Evidence Statement 2.4: Intergenerational education interventions to change attitudes of health and social care professionals and the general public

There is weak evidence from one Canadian study (**Basran 2012, - UBA, Canada**) that an intergenerational educational intervention can help improve the attitudes of medical students towards healthy older people and tackle some of the stereotyping and myths around ageing in the short term. Attitudes scores significantly improved $p < 0.01$ following intervention, but this effect was only partially maintained one year later.

There is also weak evidence from (**Hernandez 2008, quasi experimental study, Spain, -**) that the attitudes of university student towards older people change positively following an intergenerational learning programme.

Potentially these types of intervention could be implemented in the UK.

Cluster 3: Friendship programmes

Evidence Statement 3.1: Building friendships

There is consistent moderate evidence from six papers reporting results from five evaluations (Lawlor 2014 ++, Martina 2006 +, Martina 2012 + Stevens 2006 +, Pope

2013 -, Butler 2006 -) that friendship programmes can enhance various aspects of older peoples' mental wellbeing and address issues of loneliness and isolation.

In Ireland **Lawlor et al. 2014** (++) used a RCT study to evaluate a brief peer volunteer visiting programme for community dwelling older adults. Loneliness was significantly lower in the intervention group at 3-month follow-up ($p=0.003$). One quasi experimental study in two papers (**Martina 2006 +, Martina 2012 +, quasi-experimental, Netherlands**) found significant increases in the number of friends for the intervention group (all women) participating in a Friendship Programme compared to the control group ($\chi^2=9.569$, $p<0.005$), as well as significant improvements in subjective wellbeing. Another study which combined intervention and control group data from two earlier case controlled studies, as well as in comparison to data from a national survey, (**Stevens et al., 2006 +, quasi-experimental, Netherlands**) using regression analyses corroborated these findings. Regression analysis also predicted that that improvement in friendship would be associated with a decrease in loneliness two years later $p<0.001$.

Pope, 2013 -, UBA, US, - in a church based programme bringing together representatives of different parishes reported significant improvements in tangible social support at 1 year follow up [$F(1,88) = 11.22$, $p = 0.0012$]. An exploratory mixed methods study (**Butler 2006, -, US**) looked at a social support programme run by volunteers who were older people themselves. While social network and loneliness scores were good the study design meant it was not possible determine if this was due to the intervention.

Although these studies were all conducted outside of the UK, the interventions, most notably those in Ireland and the Netherlands, potentially could be delivered in a UK context.

Cluster 4: Participation in further and continuing education beyond retirement age

Evidence Statement 4.1 Face to face participation in further and continuing education

There is weak evidence supporting educational programmes targeted at older adults in university settings from 5 studies: 3 quasi-experimental studies (**Arkoff 2004 -**, **Fernandez-Ballesteros 2012 +** and **Fernandez-Ballesteros 2013 +**) and 2 uncontrolled before and after studies (**Portero 2007 +** and **Orte 2007-**).

Arkoff et al 2004, quasi experimental, USA, - looked at the effectiveness of a life review programme at a university based Academy of Life Long Learning. After a 14 weeks period there were significant improvements in wellbeing ($P < 0.05$). There were no significant changes in the comparison group.

One quasi-experimental study (Fernandez Ballesteros et al, 2012, Spain +) for another university based programme was associated with improvements in positive ($p = 0.008$) and negative affect ($p = 0.039$) compared to a control group. Impacts on negative affect were replicated in when this programme was expanded to three other countries **Fernandez-Ballesteros et al 2013 +, quasi experimental study, Spain, Chile, Mexico and Cuba.**

Portero, 2007, UBA +, Spain, found statistically significant increases in the level of subjective psychological well-being for students on a 'Third Age' university programme ($p < 0.000$). Another study **Orte 2007 -, UBA, Spain)** found that participation in mainstream university classes by older people led to a significant increase in the number of new relationships ($p < 0.001$).

These studies were conducted outside of the UK, predominantly used by retired people between the ages of 55 and 70 and had a formal academic nature. In principle the interventions identified in this review could be implemented in a UK context. Third age educational activities have a long tradition in the UK, including both academically oriented learning, as well as learning primarily for enjoyment.

Evidence statement 4.2: Internet and multi-media delivered education programmes

There is weak but consistent evidence from 4 studies on positive benefits for mental wellbeing as a result of older people participating in educational activities through the internet and other electronic media (**Fernandez Ballesteros 2004 -**, **Fernandez Ballesteros 2005a - Fernandez Ballesteros 2005b -**, **Caprara 2013 -**).

Fernandez-Ballesteros et al 2004 -, quasi-experimental, **Spain** looked at the impact of a multi-media education programme on the wellbeing of older people. Life improved significantly $p=0.005$. The study was later extended to compare the intervention with a traditional face to face version of the course delivered at a university (**Fernandez Ballesteros 2005a, quasi-experimental, Spain**). The face to face version tended towards an improvement in life satisfaction but this was not significant $p=0.11$.

Caprara et al -, 2013 quasi-experimental, **Chile, Cuba, Mexico and Spain** and **Fernandez-Ballesteros 2005b -**, quasi-experimental, **Spain** also described two evaluations of video multi-media programme and traditional educational programme delivered in university to older people. Significantly better life satisfaction in participants receiving the multi-media course in the **Caprara et al - 2013** study were seen but there was no impact in **Fernandez-Ballesteros 2005 -**.

These studies were conducted outside of the UK and involved formal structured academic education and were used by older people with a mean age of 70. Educational activities, including the use of distance learning techniques, open to people of all ages, including video and multimedia, have a long tradition in the UK. Therefore in principle these interventions could be implemented in a UK context.

Cluster 5: Self management activities

Evidence Statement 5.1 : Group and self-help activities to promote self management ability

There is moderate evidence from 2 studies (Frieswijk 2006 ++, Kremers 2006 +) that group

and self-help activities to promote self management ability (SMA) can have a positive impact on the mental wellbeing of older people in the short term but this is not sustained.

Frieswijk et al 2006 (++), randomised study with wait list control, Netherlands found that a self administered bibliotherapy course significantly improved the ability of slight to moderately frail community dwelling older people to self-manage ($P < 0.05$). Subjective wellbeing measured was significantly higher at the end of the 10 week course ($P < 0.05$) compared to controls ($P < 0.05$) but this significant difference in effect was not sustained at 6 month follow up.

Kremers et al 2006 (+), RCT, Netherlands found that self-management group intervention led to significantly improved self management ability at the end of the six week course. ($P < 0.05$). At six month follow up the difference between groups was no longer significant. In regression analysis it was shown that the intervention was associated with higher wellbeing scores at the end of six weeks but with no significant differences at six months.

These interventions could be delivered in a UK context.

Cluster 6: Use of computers and other information and communication technologies

Evidence Statement 6.1: Training courses on computing and use of the Internet

There is inconsistent evidence on the effectiveness of training courses in improving mental wellbeing and independence in older people from 13 papers covering 9 studies: 4 RCTs (Slegers 2007/2008/2012 ++) (White 2002 +) (Lagana 2013+) (Woodward 2011/13 -) , 2 quasi-experimental studies (Shapira 2007 + (Fitzpatrick 2003-) and three uncontrolled studies (Blazun 2012 -) (Campbell 2004 -) (Campbell 2005 -). In one well conducted RCT study (**Slegers 2007/2008/2012, RCT, ++, Netherlands**) no significant impact on wellbeing or loneliness was found suggesting that training courses may not have an impact. Another study (**Lagana 2013, RCT +, US**) also showed no significant difference in wellbeing in terms of self-esteem and perceived control.

There is moderate evidence from 3 studies (**Shapira 2007, quasi-experimental +, Israel; Blazun 2012, UBA -, Slovenia and White 2002, RCT+, US**) that computer training reduces levels of loneliness. There is also evidence from preliminary findings of an ongoing RCT (**Cotten 2013, RCT, USA, -**) that internet use is associated with lower levels of loneliness.

There is weak evidence from one RCT conducted in the US (**Woodward 2011-, US**) (n=83) showing no significant changes in social networks, perceived social support and loneliness, and quality of life. An exploratory follow up study also did not find any significant changes in social networks, social support and loneliness (**Woodward 2013 – US**).

(**Fitzpatrick 2003 -, quasi-experimental, US**) did not provide sufficient information to judge effectiveness. (**Campbell 2004 - and Campbell 2005, -, UBAs, US** reported reductions in computer related anxiety and an increase in internal locus of control respectively, but they did not provide sufficient information on wellbeing.

All studies are potentially applicable to the UK context. The evaluated interventions mainly targeted community-dwelling older adults and were applying standard technological equipment.

Evidence statement 6.2: Telephone and internet communication

There is consistent weak evidence from seven papers covering six studies on the potential positive impacts of the use of different forms of telephone and internet communication on independence and mental wellbeing (**Cornejo 2013 a,b -, Bernard 2011 -, Mountain 2014 ++, Newall 2013 -, Larsson 2013 -, Jimison 2013 -**).

(**Mountain 2014 ++, RCT, UK**) in a well designed pilot study evaluated the effects of telephone-based befriending on health-related quality of life and subjective wellbeing among older people. The evaluation showed results that favoured the intervention but differences between the groups were non-significant and the study ended prematurely due to difficulties in recruiting befrienders. (**Newall 2013 -, UBA, Canada**) looking at access to support via internet or telephone communication found no statistically significant mental wellbeing but concluded it could be promising in providing the older adults at risk for social isolation with

meaningful social contacts.

Larsson 2013 -, UBA study, Sweden in a very small study explored the effects of a small programme to promote social activities based on the internet. The number of social contacts increased and most participants reported improved independence when they used social internet based activities.

Jimison et al 2013 - UBA, US in a very small scale uncontrolled feasibility study looked at the use of Skype and webcam plus laptops as part of an interactive but largely automated health coaching initiative to encourage socialisation and communication in community dwelling older people. This indicated that the participants did regularly use Skype with new friendships developing.

(Bernard 2011, -, UBA, Canada) examined the effects of an intergenerational telementoring programme. Positive behaviour changes in the areas of: self-confidence, self-expression, enjoyment and self-efficacy were reported.

Cornejo 2013a,b -, uncontrolled before and after study, Mexico) in a very small scale study involving two older people and their immediate and extended families evaluated the impact of a situated display interface (a computer screen within a picture frame. Qualitative data indicate the older adults became engaged with the social network activities of their relatives and had new offline conversations and meetings.

It would be feasible to implement all of these studies in a UK context.

Evidence Statement 6.3: ICT interventions for carers

There is inconsistent evidence from three uncontrolled studies (Torp 2008 +, Torp 2013 -, Dow 2008 -) on the effectiveness of information and communication technologies in improving the mental wellbeing and independence of older informal carers. There is evidence

from one study (**Torp 2008 +, UBA , Norway**) that computer classes for carers were effective in improving the social contacts and sense of support for spousal carers who had caring responsibilities with their family and friends. Another, largely qualitative study, **Torp 2013 (-), UBA study, Norway**) reported that most older carers made use of ICT-based interventions to establish and sustain contact with informal peer support networks. Addressing the issue of social isolation in older carers living in rural areas, **Dow 2008 (-), UBA, Australia**) used a computer training intervention to develop basic computer skills, using email and the internet to improve the carers' mental wellbeing. Although results indicated a reduction in depressive symptoms and loneliness, no statistical evidence for the effectiveness of this intervention was provided.

All three of these studies are potentially applicable to the UK context. The interventions used were targeted at older informal carers in the community setting and in one study specifically focusing on the population of rural carers.

Evidence Statement 6.4: Computer gaming

There is weak evidence from two US studies (**Studenski 2010, -, Kahlbaugh 2011, -**) on positive mental health outcomes for older people who make use of computer gaming devices. There is weak evidence from one unblinded and controlled study (**Studenski 2010, UBA, USA -**) that participation in interactive computer video dance games led to a significant improvement in positive self-reported mental wellbeing. There is weak evidence from an uncontrolled before and after study (**Kahlbaugh 2011, UBA, USA -**) that playing computer simulation games such as the Wii also increased positive mood. The two studies are potentially applicable to the UK contexts.

Abbreviations

| | |
|--------------------|---|
| AOK | Ando-Osada-Kodama Loneliness Scale |
| AWW | Autobiographical writing workshop |
| CBA | Controlled before and after study |
| ICT | Information and Communication Technology |
| LSI-A | Life Satisfaction Scale-A |
| LSNS-R | Lubben Social Network Scale-Revised (LSNS-R), |
| MOSS | Medical Outcomes Study Social Support Survey |
| NRCT | Non-randomised controlled trial |
| PANAS | Positive and Negative Affect Scale |
| RCT | Randomised controlled trial |
| SD | Standard Deviation |
| SE | Standard Error |
| UBA | Uncontrolled before and after study |
| UCLA | University of California, Los Angeles |
| UK | United Kingdom of Great Britain and Northern Ireland |
| WEMWEBS | Warwick Edinburgh Mental Wellbeing Scale |
| WHOQOL-BREF | World Health Organisation Quality of Life - BREF |

Full Report: Introduction

The mental wellbeing and independence of older adults is a relevant public health issue. Life expectancy in the UK at age 65 has risen steadily for men and women from 13.0 and 16.9 years respectively in the period 1980-1982 to 18.2 and 20.7 years in 2010-2012 (Office for National Statistics 2014) In the 2011 census 16% of the population were over the age of 65 (Office for National Statistics 2011); this is expected to rise to 23.5% in 2034. (Office for National Statistics 2013, Age UK 2014).

Previous research in this area has recognised common mental health promoting factors, as well as protective and risk factors for mental ill-health (such as depressive disorders) among the ageing population. For example, the connection between various aspects of mental wellbeing and available social resources in later life has been emphasised in previous research (see for example (Nygqvist et al. 2013). The risk of social isolation and loneliness can increase with age and can have a detrimental impact on current and future physical and mental wellbeing and independence (Cattan et al. 2005, Dickens et al. 2011, Shankar et al. 2013). Longitudinal surveys of loneliness across northern Europe suggest that between 8% and 11% of people over the age of 65 perceive themselves to often or always be lonely (Victor and Bowling 2012).

However much of the focus has been on taking action to help support the independence of older people who are already in a fragile state and living with complex chronic health problems and mental disorders such as dementia and depression. There is now an increased greater focus on healthy ageing and active ageing, including the targeting of intervention to healthy independent older people. The review focuses on this issue looking at actions to promote and maintain the mental wellbeing and independence of the general healthy older people, rather than focusing on helping those older people who are already living in a state of poor health.

Our focus is on mental wellbeing rather than mental disorders and it is clear that mental wellbeing is a complex subjective state with no one single agreed definition of this concept. Instead, there is a variety of dimensions that have been highlighted in the literature, as well as a diversity of tools to measure these dimensions. For instance, the World Health Organization (WHO) defines mental health as ‘a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and

fruitfully, and is able to make a contribution to his or her community' (WHO, 2001). Further, six criteria for positive mental health have been suggested (Jahoda, 1958; Ryff, 1989). According to Ryff (1989), positive psychological functioning can be identified as self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. These theory-guided dimensions are often referred to as 'psychological well-being' and have shown to be a component of overall well-being (Keyes, Shmotkin & Ryff, 2002; Ryff & Keyes, 1995). Keyes, Dhingra, and Simoes (2010) and Keyes, Myers, and Kendler (2010) have also refer to positive mental health as 'flourishing', covering feeling good about and functioning well in life.

At policy level, Lehtinen (2008) suggested in a report to the European Union that mental health is an individual resource comprising two dimensions: positive mental health (or psychological well-being) and negative mental health (or mental ill-health). According to this conceptualization, positive mental health can be a value in itself (Lehtinen, 2008) or it can include a positive sense of well-being, individual resources, the ability to develop and sustain satisfying personal relationships and the ability to cope with adversity (Jenkins et al., 2008). In the Foresight Mental Capital and Wellbeing Project, Kirkwood, Bond, May, McKeith, and Teh's (2008) defined mental well-being as 'a dynamic state that refers to individuals' ability to develop their potential, work productively and creatively, build strong and positive relationships with others and contribute to their community' (p. 19). This definition brings together the previous definitions of mental health and positive mental health as mental well-being. In addition, The National Institute for Health and Clinical Excellence ([NICE] 2008) adopted the NHS Health Scotland (2010) definition of mental well-being in their guidance on the promotion of the mental well-being of older people. By contrast to the other definitions presented above, this is age specific and encompasses life satisfaction, optimism, self-esteem, mastery and feeling in control, having a purpose in life, and a sense of belonging and support.

The range of conceptualisations of mental wellbeing shows that despite some overlap between them, each of them includes additional and specific dimensions. This dissimilarity is reflected in the debate around the measurement of mental well-being. Some authors have developed specific tools for the measurement of mental well-being (e.g., Stewart-Brown et al., 2009), others have suggested the use of specific scales from existing validated measures, such as the SF-36, the WHO-5, the GHQ-12 or the OPQOL (Bech, Olsen, Kjoller, &

Rasmussen, 2003; Bowling, 2009; Hu, Stewart-Brown, Twigg, & Weich, 2007; Lavikainen, Fryers, & Lehtinen, 2006).

Because of the contested nature of the mental well-being concept, the lack of an in-depth discussion on its implications for older people, and the diverse measurements used to assess it, this review aim to adopt a pragmatic approach by including any initiative or intervention that targets and aims to measure the positive end of the mental health spectrum, including life satisfaction, quality of life, happiness, mastery, empowerment, capability and positive functioning, as well as social resources.

Aims

The aims of the review therefore are to assess the effectiveness of interventions to improve the mental wellbeing and/or independence of people aged 65 and over, who do not have substantial health and social care needs and live independently in the community.

A broad range of activities fall within the scope of the review, including interventions to raise awareness of the importance of older peoples' mental wellbeing and independence, as well as to improve knowledge of information and support on access to services to support mental wellbeing and independence among professionals, older people, their carers, families and the wider community. They can include activities to tackle ageism and encourage cross-generational respect and social inclusion. Actions to promote and maintain the social networks of older people, including the use of new communication technologies as important tools for health promoting initiatives would be covered as would psychological interventions delivered to promote mental wellbeing by, for example, supporting motivational or goal-attainment aspects. Similarly e-health or m-health (i.e. internet-based or mobile technology-based) interventions that are designed to promote mental wellbeing or independence will be included, but not the use of these interventions for the treatment of mental disorders.

Measures to identify and assess older people within a local community who have poor mental wellbeing or are at high risk of mental wellbeing decline, as well as assess and identify older people who lack choice and control over the services they use or who are at high risk of losing their independence are covered.

The review covers services commissioned by local government and other local providers, including charities and faith groups, but excludes most interventions that are delivered on a one to one basis by health and social care professionals, as well as interventions covered by NICE guidance PH16.

Research questions

The overarching question addressed in this review is

- What are the most effective ways to improve or protect the mental wellbeing and/or independence of older people? (Question 2, in the NICE final scope)

Supplemental questions that are addressed focus on specific types of intervention and/or target population groups. In some cases the relevant target groups are not older people but those that come into contact with them such as any paid or unpaid carers, as well as health and social care professionals.

Supplemental research questions include:

- Does the effectiveness and cost effectiveness of interventions differ by delivery mechanism and person/organisation delivering it?
- What is the role of services (such as transport and care support in the home), and technologies (such as alarm systems, electronic communication and information systems) in improving or protecting the mental wellbeing and independence of older people?
- Is participation in volunteering or educational activities effective in improving and/or protect mental wellbeing and independence?
- Does the effectiveness and cost effectiveness of interventions vary for different target populations?
- Are targeted approaches to the delivery of interventions more effective than universally delivered interventions?

Review Methods

Inclusion and exclusion criteria

Types of study design

A broad range of study designs are covered including randomised controlled trials, quasi-randomised controlled trials, before and after studies with or without comparator groups, mixed method studies including both quantitative and qualitative research and pilot/feasibility studies. Only primary studies are included, reviews of previous studies are examined for relevant studies that meet inclusion criteria.

Table 1 provides an overview PICO summarising the study population, interventions, comparator groups and outcomes of interest. These are also described in the following sections.

Study population

Our principle focus is on retired community dwelling and healthy older people, with the search strategy predominantly focused on older people aged 65 and older, although individuals aged 55 upwards who are also retired and at risk of premature ageing are also covered. Some actions and interventions may cover a wider population age range than that defined in scope. These are included where study findings are reported for different population sub-groups including our target population groups (including for those aged 55+ where they are already retired). Alternatively where there is no breakdown by age group we have adopted an approach that we previously used to review psychosocial interventions for mental wellbeing in older people. In this review studies could also be included if some of the participants were younger than 55, as long as the mean age was at least 70 in these cases. In this review however, the focus of these studies needs to be on retired people rather than those still in paid employment.

We also have excluded older people who live in or attend a residential care home on a day basis, older people with any form of pre-existing diagnosed mental health disorder, dementia or intellectual disability as covered by the ICD-10 (International Statistical Classification of Diseases and Related Health Problems 10th Revision 2010) from that fall into the group F00

to F99 and diseases of the nervous system G00 to G99. We also excluded all older people in receipt of palliative care. We also exclude all older people already identified as having substantial existing health and social care needs (i.e. interpreted here as being already identified as needing or already being in receipt of health and social care services).

In terms of operationalising the exclusion governing older people with substantial health and social care needs, we will make use of long standing guidance in England on eligibility criteria for fair access to care services. This defines substantial care as:

- there is, or will be, only partial choice and control over the immediate environment; and/or
- abuse or neglect has occurred or will occur; and/or
- there is, or will be, an inability to carry out the majority of personal care or domestic routines; and/or
- involvement in many aspects of work, education or learning cannot or will not be sustained; and/or
- the majority of social support systems and relationships cannot or will not be sustained; and/or
- the majority of family and other social roles and responsibilities cannot or will not be undertaken

Source: 'Prioritising need in the context of "Putting people first": a whole system approach to eligibility for social care' (Department of Health, 2010).

In practice when reviewing international studies this will mean excluding older people who are receiving routine help with the basic activities of daily living such as eating, washing and dressing. There may be information in some studies on the level of impairment in dealing with activities of daily living using measurement scales such as ADL, Barthel Index, Katz ADL or the WHO Disability Schedule (WHO-DAS) to help assess relevance.

The reviews also covers some interventions that are targeted at health, social care and other professionals, as well as community volunteers who may come into contact with older people.

Types of intervention

Interventions to raise awareness of the importance of older peoples' mental wellbeing and independence, as well as to improve knowledge of information and support on access to services to support mental wellbeing and independence among professionals, older people, their carers, families and the wider community.

Activities to promote or maintain the mental wellbeing and/or independence of older people are also covered. These can include training and awareness raising activities targeted at professional service providers, volunteers and members of the community to tackle ageism and encourage cross-generational respect and social inclusion. It could also include psychological interventions delivered to promote mental wellbeing by, for example, supporting motivational or goal-attainment aspects. Similarly, e-health or m-health interventions that are designed to promote mental wellbeing or independence but not the use of these interventions for the treatment of mental disorders. Another group of interventions covers activities intended to address loneliness and isolation, for example through befriending and other visiting services.

Actions to promote and maintain the social networks of older people, including the use of new communication technologies as important tools for health promoting initiatives (e.g. social media use or personal home based alarm systems use) by older people on their mental wellbeing and independence, as well as looking at well established technologies such as the telephone.

The work of community-based volunteers, including older people themselves, as well as non statutory sector community workers and service providers to promote, support and protect older people's mental wellbeing or independence.

Other actions include measures to specifically facilitate access to education, leisure, community activities and transportation services/mobility support for older people.

Interventions intended to improve the identification of risks to wellbeing or independence of older people during encounters with health, social care and other professionals in their own homes may also be identified as part of review 1 but are not a prioritised area due to the focus of our search strategy criteria on the target study population rather than on risk assessment. We anticipate identifying more information on individual level risk assessment procedures,

as well as actions at community level to identify those at risk of poor mental wellbeing and independence, for instance through different epidemiological and other population surveillance measures, through other reviews being conducted looking at barriers and facilitators to effective action and a mapping of practice in the UK. In the same way evidence on effective commissioning of relevant services and activities by local government and other local community providers to promote, support and protect older people's mental wellbeing or independence falls within the scope of this review, but relevant material is more likely to be picked up in these additional complementary reviews.

Comparators

Comparator interventions can include different ways of delivering the same intervention, as well as alternative interventions to promote mental wellbeing and independence. We have also included comparisons of interventions with no intervention or usual practice

Types of outcome measure

Primary outcomes of interest included impacts on measures of mental wellbeing in study populations or changes in measures of independence. As noted in the introduction there are different potential definitions of mental wellbeing as it can be operationalised in many different ways. Because of the contested nature of terminology for the mental wellbeing and independence concepts, the lack of an in-depth discussion on its implications for older people, and the diverse measurements used to assess it, this review has adopted a pragmatic approach by including a large variety of initiatives or interventions that targets and aims to measure the positive end of the mental health spectrum, including life satisfaction, aspects of quality of life associated with positive mental wellbeing (e.g. some components of the SF-36 and other quality of life tools), happiness, mastery, empowerment, capability and positive functioning, as well as social resources, social inclusion and civic participation. The review does not outcome measures that report a reduction in symptoms of mental disorders or distress.

Given that our review was focused on relatively healthy older adults who did not have substantive health and social care needs our measures of independence did not focus on ability to conduct fundamental activities of daily living such as washing or dressing but did

cover any measurement of instrumental activities of daily living such as the ability to pursue leisure activities or go shopping. It also covered measures of independence that impacted on broader aspects of life such as the ability to participate in community events, including measures of ability to make choices and exercise control over daily life.

Both mental wellbeing and independence (with the focus here of the latter on engagement with the community and participation in activities) can potentially be affected by social capital and the review also considered related outcomes where reported, including social inclusion, social participation, social networks, as well as social cohesion, sense of belonging, social support and increased levels of civic engagement). Measures of isolation and loneliness, which again can have an impact on mental wellbeing and an individual's independence were also included. We reported on all relevant outcomes where studies reported multiple outcome measures.

Other outcomes of interest include the impact of training and awareness raising measures on the behaviours and attitudes of health care and other professionals. Outcome measures might include simple post test/course recall measures, impacts on wellbeing service referral rates or measures of change in behaviours and attitude towards healthy older people.

Exclusion criteria

In addition to exclusions related to the characteristics of the study population: physical and mental health disorders, living in residential care, or having any other substantial health and social care needs, a number of different types of intervention are also excluded:

All one-to-one interactions between older people and health/social care professionals. This includes

- a) Management of a chronic medical condition or disability, including dementia or another mental health disorder.
- b) Procedures for, and eligibility criteria used in, assessments for social care support and other welfare benefits.
- c) Using psychological interventions such as cognitive behavioural therapy where used to treat diagnosed mental disorders.

d) Planning for the built environment to meet older people's needs including 'age-friendly city' initiatives.

e) Prevention of mental and physical health conditions (such as cognitive decline, obesity, diabetes, cardiovascular disease or falls), unless specific components of the intervention support or improve mental wellbeing or independence.

f) Occupational therapy and physical activity interventions recommended in PH 16 guidance on occupational therapy and physical activity interventions to promote the mental wellbeing of older people in primary care and residential care.

g) Interventions targeted at older people in the workplace

h) Interventions targeted at the prevention of elder abuse and domestic violence targeted at older people

Table 1: PICO Table on the effectiveness of interventions to improve or protect the mental wellbeing or independence of older people.

| Intervention Target Group | Intervention | Comparison | Outcome |
|---|---|---|---|
| Health, Social Care and other Professionals (e.g. housing association workers), as well as community volunteers, coming into contact with older people, as well as the wider local community. | Various training, awareness raising interventions, including improved knowledge of services and supports. Another example would be actions to change attitudes positively towards older people, and help empower professionals and other workers (including volunteers) to take more actions to improve mental wellbeing and independence of older people. Another group of interventions covers activities intended to address loneliness and isolation, for example through | Comparisons between different modes of delivering training and awareness as well as with no action. | Retest-recall measures; Impact on referral and service uptake by older people. Measures of staff behaviour /attitude change if documented. Impacts on mental wellbeing for older people (see next row for fuller set of outcomes) might also be linked to changes in the actions of professionals and volunteers. Impacts on the independence of older people might also be linked to changes in the actions of professionals and volunteers. (see next row for fuller set of outcomes) |

| | | | |
|---|--|---|--|
| | befriending and other visiting services provided by both professionals and volunteers. | | Impacts on social capital (see next row for fuller set of outcomes) Levels of isolation and loneliness |
| Older people, their families and unpaid carers. | Various awareness raising interventions including improved knowledge on services and supports. | Comparisons between different modes of delivering training and awareness as well as with no action. | Impact on behaviours including service uptake by older people and families Impacts on health, social care and other resource use / cost implications Mental wellbeing (can be operationalised in many ways including measures of self-esteem, self-efficacy, quality of life, life satisfaction, resilience, happiness and use of specific instruments such as Warwick |
| Sub- groups of population Findings will be reported for population sub-groups as the evidence base allows. Many possible sub-groupings. One of the most important will be age e.g. oldest old (80+) versus younger groups given greater risks of reduced independence compared to younger old groups., Other | | | |

| | | | |
|--|--|--|---|
| <p>examples are likely to include differences by gender, ethnicity, culture and socio-economic status.</p> | | | <p>Edinburgh Mental Wellbeing Scale)</p> <p>Measures of independence: including measures of ability to make choices and exercise control over daily life. It can also cover measures of the ability to live independently e.g. measures on need for help with the daily activities of living</p> <p>Social capital (i.e. social inclusion, social participation, social networks, as well as social cohesion, sense of belonging, social support, increased levels of civic engagement)</p> <p>Levels of isolation and loneliness</p> |
|--|--|--|---|

| | | | |
|--|---|--|--|
| | | | Awareness of how to contact/access available support services |
| Primary Care Health Professionals, Social Care Professionals and Related Professional groups | Training in and use of mechanisms and guidance to identify risks to continued mental wellbeing and independence during contacts with older people in their own homes. | Comparisons between different approaches to training and use of mechanisms to identify risks to continued mental wellbeing and independence as well as with no action. | Referrals and signposting to services to support mental wellbeing and independence. Improved awareness in professionals, older people and their families, and unpaid carers of risks and/or how to better protect mental wellbeing and independence. Subsequent use of services to promote / protect mental wellbeing and independence Impacts on health, social care and other resource use / cost implications |
| Older people and unpaid carers as a whole, plus some | Actions to increase access to / use of both general public | Comparisons between different actions to encourage use of | Impact on behaviour including service |

| | | | |
|---|---|---|--|
| <p>of the older people population sub-groups.</p> | <p>transport and dedicated transportation services as well as access to /use of mobility devices.</p> | <p>transportation services. This could for instance include comparisons of different transport options specifically targeted at older people such as dial-a-bus services, and entitlement of all older people to free or nearly free public transport (e.g. bus and train passes specifically for older people). It could also include access to services such as dial –a-bus services) specific collection and delivery services for older people.</p> | <p>uptake by older people Impacts on mental wellbeing, social capital and independence as above. Impacts on health, social care and other resource use / cost implications Levels of isolation and loneliness</p> |
| <p>Older people and unpaid carers as a whole, plus some of the older people population sub-groups.</p> | <p>Actions to increase access to / use of home-based technologies / remote monitoring, information communication systems.</p> | <p>Evaluations of new information communication technologies introduced since the beginning of 2000 Comparisons between different types of these electronic/communication and with no action/intervention.</p> | <p>Impact on behaviour including service uptake and continued use by older people, families and unpaid carers. Impacts on identification of at risk individuals Impacts on mental wellbeing, social capital and independence as above.</p> |

| | | | |
|--|---|---|--|
| | | | <p>Impacts on health, social care and other resource use / cost implications</p> <p>Levels of isolation and loneliness</p> |
| <p>Older people and unpaid carers as a whole, plus some of the older people population sub-groups.</p> | <p>Other actions and interventions (within scope) to promote mental wellbeing and independence. These include improved access to leisure, education and community activities.</p> | <p>Comparisons between different actions to encourage use of these services/ activity.</p> <p>Comparisons between different types of services/activity and with no action/intervention.</p> | <p>Impact on behaviour including service uptake by older people</p> <p>Impacts on mental wellbeing, social capital and independence as above.</p> <p>Impacts on health, social care and other resource use / cost implications</p> <p>Levels of isolation and loneliness</p> |

Search strategy

Methods, as outlined in the Methods for the Development of NICE Public Health Guidance (2012), are being used to guide the development of the review protocol and search strategy. This comprises a systematic search of the literature supplementing studies identified from bibliographic databases together with information from other sources, including relevant research reports from non governmental organisations, academic groups and government departments. The review team also sifted through responses set in to the call for evidence published by NICE and hand searched a number of journals including Working with Older People, Educational Gerontology, Ageing and Society and Ageing and Mental Health

Sensitive search strategies were developed by the research team and peer-reviewed by information specialists at NICE using a combination of controlled vocabulary and free-text terms. Fundamentally they combine different structured terms related to evaluations of intervention related to positive mental health, mental wellbeing, social capital and independence with terms and free text related to older people. No specific terms were included to cover the population between the ages of 55 and 65. The search strategy was initially developed in MEDLINE and was then adapted to meet the syntax, character and platform restrictions of each included database. Search strategies are available in the Appendix to this report. We checked reference lists of included previous reviews to identify further potentially eligible studies. Studies were managed in an Endnote Bibliographic Database.

Literature searches were conducted from 2003 onwards and only studies published in English were included. While the electronic searches needed a time frame to achieve successful management of the retrieved data, this date range was also applied in order for the covered evidence to be up-to-date. The large number of records retrieved, even with a restriction to records from 2003 onwards meant that we restricted the search of databases to those we considered most relevant to this topic and less likely to be focused on clinical literature:

Ageline

ASSIA (Applied Social Science Index and Abstracts)

Database of Abstracts of Reviews of Effectiveness (DARE)

ERIC (Educational Resources Information Centre Database)

Google Scholar

Medline

PsycINFO

Social Care Online Database

Websites searched

In addition to our search of databases the following websites were also searched

Age Cymru <http://www.ageuk.org.uk/cymru/>

Age NI <http://www.ageuk.org.uk/northern-ireland/>

Age Scotland <http://www.ageuk.org.uk/scotland/>

Age UK <http://www.ageuk.org.uk/>

Audit Commission <http://www.audit-commission.gov.uk/>

Campaign to End Loneliness <http://www.campaigntoendloneliness.org/>

Centre for Ageing Research and Development in Ireland <http://www.cardi.ie/>

Health Evidence <http://www.healthevidence.org/>

International Longevity Centre <http://www.ilcuk.org.uk/>

Joseph Rowntree Foundation <http://www.jrf.org.uk/>

The Kings Fund <http://www.kingsfund.org.uk/>

Local Government Association <http://www.local.gov.uk/>

Mind <http://www.mind.org.uk/>

NIACE National Voice for Lifelong Learning <http://www.niace.org.uk/>

NIHR School for Social Care Research <http://www.sscr.nihr.ac.uk/>

NIHR School for Public Health Research <http://sphr.nihr.ac.uk/>

Personal Social Services Research Unit (Publications) <http://www.pssru.ac.uk/publications-search.php>

ProMenPol (Mental Health Promotion Database)
<http://www.mentalhealthpromotion.net/?i=promenpol.en.about>

Social Care Institute For Excellence <http://www.scie.org.uk/>

Well Scotland <http://www.wellscotland.info/>

Title and abstract screening

All records from the searches were uploaded into a database and duplicate records were removed. Records without abstracts were excluded from the analysis. Where no abstract was available, a web search was first undertaken to locate one; if no abstract could be found, records were screened on title alone and full-text documents were retrieved where there was any doubt. Screening was piloted between four reviewers using a random sample of 100 records and discussions then took place to refine inclusion and exclusion approaches. Records from all electronic databases (with the exception of social care online) were double screened by reviewers and all records that were identified as relevant by at least one of the two reviewers were then examined in full text. In the case of records from the Social Care Online Database, where records had to be retrieved in a slightly different manner because of the nature of the software platform all screening was done by one reviewer, although a sample of 200 records (2.3% of all social care online records) were also screened by a second reviewer, with an agreement rate of 88.5%.

To be eligible for inclusion studies needed to be published on or after 2003 (although snowballed citations from 2002 were also included), studies had to be primary evaluations of interventions to promote mental wellbeing and/or independence in older people, or in a broader population where results for older people could be identified. Interventions targeted solely at older people with diagnosed health problems, terminally ill or already in receipt of health and social care services were excluded and most interventions delivered by health and

social care professionals (as described earlier in this report) were excluded. The definitions of interventions earlier also specify those limited circumstances where interventions delivered to health and social care professionals (i.e. training interventions to improve their awareness of mental wellbeing and attitudes to healthy older people). Studies that were relevant to two further reviews on barriers and facilitators and UK practice were noted. It was possible for studies to be flagged up as relevant to multiple reviews.

Full text screening

Records that appeared to meet all these criteria were then obtained in full text. A convenience sample of 100 full text records were double screened by two reviewers. Agreement rates were high at 91% and discussion on disagreement was used to inform the ongoing review process. Further, where reviewers were in doubt on eligibility a discussion was held within the review team.

Data extraction and quality assessment

The quality of included studies was assessed by one reviewer, with a 10% sample checked by a second reviewer. Relevant data were extracted for detailed evidence tables. Internal and external validity of the studies was rated using quality appraisal checklists which followed the methods as outlines in the methods manual, with each study being coded as either ++, +, or -. ++ indicated a high quality score for internal and external validity, where the study demonstrated all or most of the checklist criteria had been fulfilled, and where these had not been fulfilled, the conclusions of the study were unlikely to alter, had this been the case. + indicated moderate quality for internal and external validity, where the study demonstrated some of the checklist criteria had been fulfilled, and where they had not been fulfilled, or not adequately described, the conclusions of the study were unlikely to alter. – indicated a low quality score for internal and external validity, where the study demonstrated few or none of the checklist criteria had been fulfilled and the conclusions of the study were likely or very likely to alter, had this been the case.

The heterogeneity in outcomes measures used meant that this review took the form of a narrative synthesis rather than a meta-analysis. Evidence statements summarising the available evidence were produced, which reflected the strength (quality, quantity and consistency) of the evidence and statements regarding its applicability were made. The

quality of the evidence was categorised as strong (where statements were based on evidence from several high quality studies), moderate (where statements were based on evidence from either one high study, or a mixture of high and lower quality studies), weak (where statements were based on evidence from lower quality studies). Statements were also made where there is a lack of evidence. A brief statement on the potential relevance of the evidence to a UK context was included with each evidence statement.

Results

23,524 records were identified from the search strategy run in March 2014 including 22,980 references from database searches and 544 from searches of websites, previous reviews, citation searching and reference tracking. Following removal of 5,011 references due to duplication, a total of 18,513 references were screened based on their title and abstract. Of these, 18,018 references were deemed not eligible for inclusion, thus a total of 495 were eligible for screening based on their full text. We excluded a total of 424 of the full-text papers that did not fulfil the inclusion criteria. Reference lists of reviews identified and excluded were screened for further studies. Additionally, we identified a further 9 eligible papers. This included two papers in Spanish, which were obtained in order to obtain detailed study findings that had been only been summarised in English language publications and 6 further studies from looking at the barriers and facilitators and mapping reviews. A published protocol flagged up another study which eventually completed its peer review process and was accepted for publication during this review process. This left us with 86 records included in the review (Figure 3).

Overview of results

86 papers were included in this review covering a number of different types of activity, and 20 evidence statements related to 6 identified themes have been drafted. 9 papers from the UK covering 7 studies, as well as 2 from the Republic of Ireland have been included in this analysis, but most of the interventions and activities discussed are feasible to implement in a UK context. These interventions come from many different countries around the world, but are dominated by US set studies. There is less focus in the review specifically on interventions to maintain independence, perhaps because many interventions in this area are

targeted at individuals who are already at risk of a loss of independence because of poor physical and mental health.

The review indicates that there is promising evidence, albeit often from weak study designs, that various forms of social resources are beneficial for mental well-being in older people. These include improving access to social contacts and networks and participation in social activities and general community life. This is not surprising as later life covers an extended period of the life course and is likely to include changes in health, social engagement and networks with family and friends. For example, older people are more vulnerable to decreasing social networks as they are at greater risk of losing their partner and friends, which at the same time makes them more dependent on other social resources within the society. Further, being socially integrated in society in terms of participation and frequent social contacts and activities has been previously proven to be beneficial for mental health and wellbeing among older people e.g. (Forsman et al. 2012)

One evidence statement focuses on a number of different intergenerational activities that in particular bring older people and school aged children together. These have been seen as one way of reducing isolation, while at the same time they can also help to challenge negative attitudes towards older people and ageing in society. Given the focus of the review on actions largely outside of the health and social care sector, one area of some focus is on a range of interventions related to arts and creative activities and their impact on mental wellbeing. Studies looking at the impact of continued participation in education beyond retirement age (third age learning) have been identified. There is also a cluster of studies focused around the use of new technologies to aid in communication between older people and their social networks. The review found little specifically on tackling ageism and effective ways of identifying at risk groups, nor information on effective ways of commissioning services.

It is also clear from the evidence statements and the detailed tables in the appendix that a great number of different outcome measures are used to look at mental wellbeing and independence, making it impossible to produce any meaningful type of meta- analysis. It is also notable that almost no study makes use of the Quality Adjusted Life Year (QALY) as an additional outcome measure alongside independence and mental wellbeing, although some

studies do report outcomes using the SF-36 or SF-12 instruments, from which it is possible to derive Quality of Life Scores.

Study characteristics

Only 18 of the studies used randomised controlled study designs, limiting the internal validity of the evidence base. Most of the studies have relatively small populations and few appear to have powered their studies to detect significant effects: 55 studies have total populations that are less than 100 and 33 have total populations that are under 50.

Furthermore, most of the study populations are heavily dominated by women; only two studies included more men than women. This may have implications for the relevance of much of this evidence base for the mental wellbeing and independence of older men.

Interventions targeted at older people may be perceived as being too female orientated by some men, who may therefore be reluctant to participate (Dwyer and Hardill 2011, Cook et al. 2013). Figure 2 plots the reported mean ages for each of 82 papers¹ where this information is provided.

¹ Median age reported for study by Lawlor et al 2014

Figure 1: Gender balance in included studies

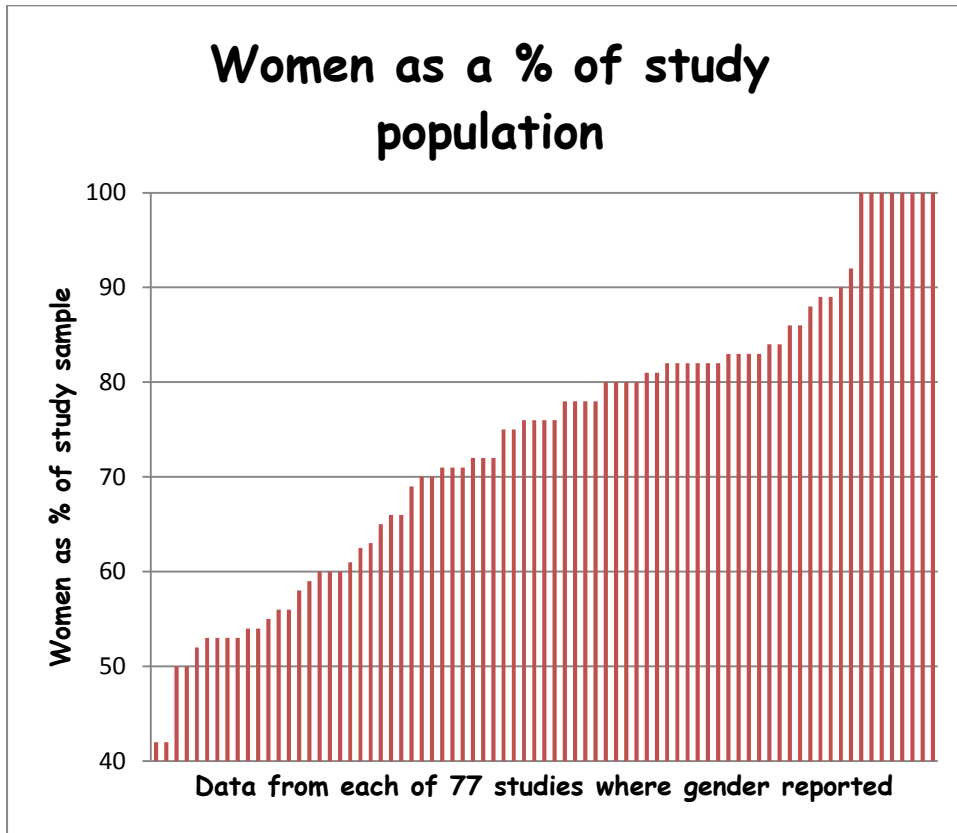


Figure 2: Reported mean age of study populations.

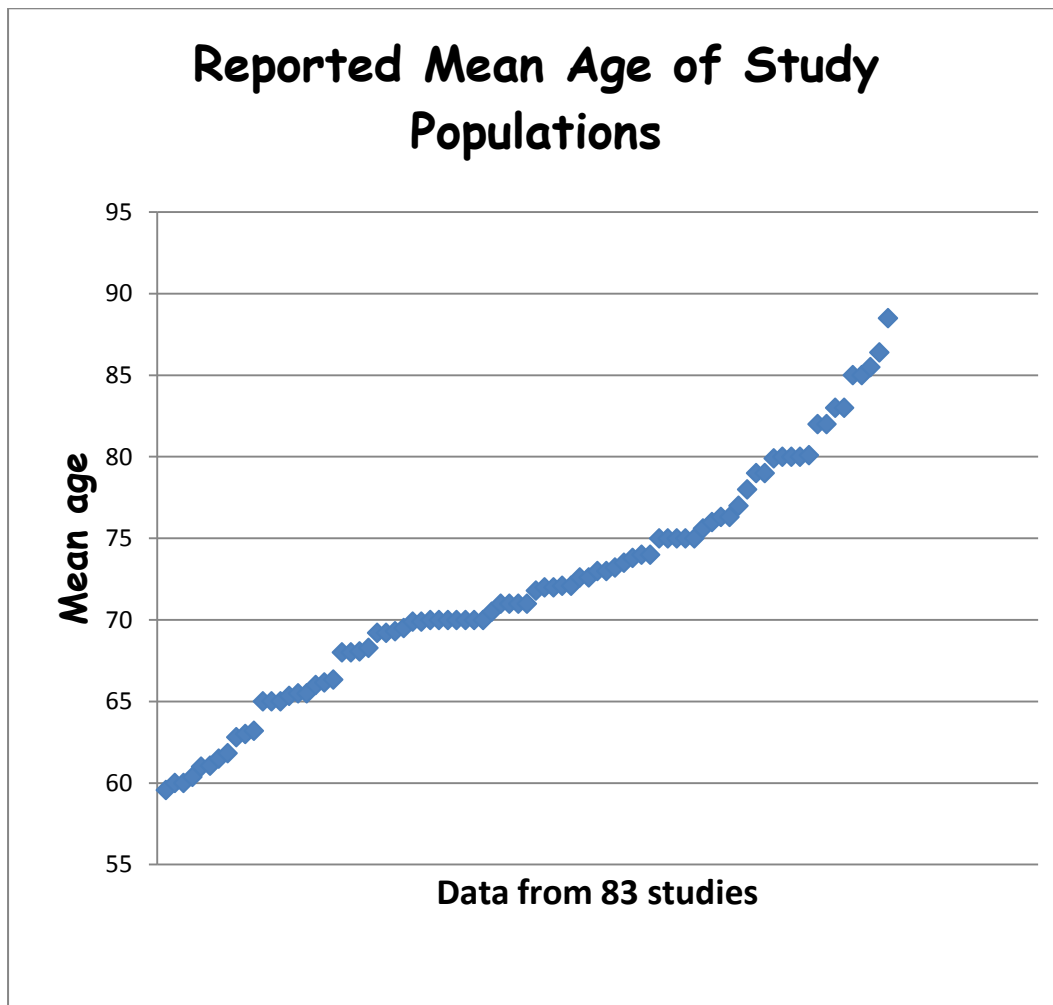
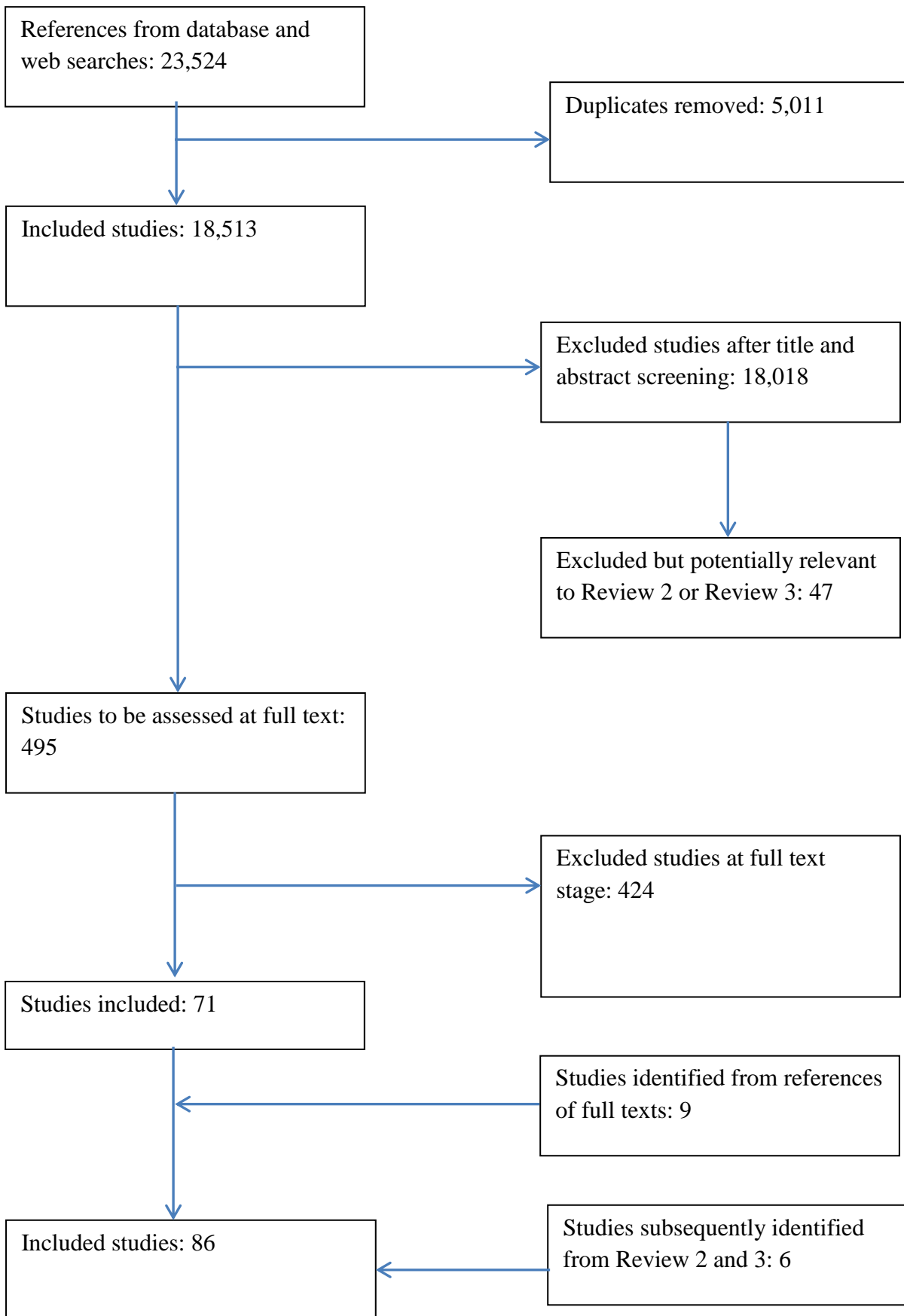


Figure 3: Literature review flow chart



Evidence Statements: what are the most effective and cost effective ways to improve or protect the mental wellbeing and/or independence of older people?

Review findings are grouped broadly by type of intervention and/or target group and divided up into 6 clusters with a total of 20 evidence statements. It includes studies that report results that are not beneficial or lead to adverse events. Both mental wellbeing and independence outcomes are reported and described for each intervention. Studies can potentially appear in more than one evidence statement, e.g. an intergenerational intervention or third age education programmes that are delivered using new technology.

Cluster 1: Participation in social activities and support

Evidence Statement 1.1: Multi-component multi-location social support interventions

There is inconsistent evidence from three studies on the effectiveness of multi-component interventions on the mental wellbeing and independence of older people: 1 RCT, 1 quasi experimental study, 1 exploratory uncontrolled before and after study (Saito 2012 +, Honigh-de Vlaming 2013 +, Bartlett 2013 -). Moderate evidence from a multi-component intervention targeted at older migrants in Japan (**Saito et al. 2012 +, RCT, Japan**) reported a significant positive effect on subjective well-being ($p=0.039$), social support ($p=0.013$) and loneliness ($p=0.011$).

One Dutch study found moderate evidence that a multi-component healthy ageing programme, including a mass media and information campaign, had a positive impact on loneliness literacy. (**Honigh-de Vlaming 2013 +, quasi-experimental study, Netherlands**). At 2 year follow-up, the intervention group scored more favourably than controls on loneliness literacy subscales: (relative effect size -4.4% , $p<0.05$) perceived social support mean scores (relative effect size -8.2% $p<0.05$) and subjective norm mean scores (relative effect size -11.5% , $p<0.05$). However there was no significant impact on loneliness or actual social support levels at two-year follow up

One weak exploratory uncontrolled pilot Australian study examining different multi-faceted programmes (including fitness and arts programmes, community forums, a

volunteer buddy system and culturally appropriate volunteers showed no impact on loneliness and social support (**Bartlett 2013 - , UBA, Australia**).

Although these studies were conducted outside of the UK, multi component healthy ageing initiatives are available in the UK; the applicability of programmes would need to be assessed on a case by case basis. All of these interventions were targeted at healthy older people, although some components of programmes were targeted at people with mild levels of depression.

Table 1.1: Characteristics of Studies in Evidence Statement 1.1: Multi-component, multi-location interventions

| Author Year Country | Quality rating | Study type | Sample size | Intervention content |
|--|-----------------------|---|--|---|
| Bartlett 2013 Australia | - | Exploratory uncontrolled before and after study | 42: intervention 1, mean age 66 – range 54-93) 15: intervention 2 mean age 68 – range 42-84) 16: intervention 3 mean age 79 – range 63-100 | Intervention 1: A fitness programme based on a range of exercises; Intervention 2: a programme containing activities such as community forums, better integration of services for older people; Intervention 3: development of a culturally appropriate model of volunteer service delivery for older migrants |
| Honigh-de Vlaming 2013 The Netherlands | + | Quasi experimental study | 905 (intervention) (mean age 73.6; 44% male) 899 (control) (mean age 73.8, 47% male) | Mass media campaign, information meetings for interested local older people, psychosocial group courses for people with mental health problems (mild depressive symptoms) or chronic diseases, social activation through community-based Neighbours Connected intervention and training |

| | | | | |
|------------------------|---|-----|--|--|
| | | | | of intermediaries (homecare nurses, municipal advisors, and volunteers) to improve recognition of loneliness |
| Saito 2012 Japan | + | RCT | 21 intervention 42 (control) Mean age 73, 40% male | Programme providing an opportunity for participants to meet each other, exploring the effects of participants' relocation experiences on their lives, finding out about the types of information participants need, and a sightseeing tour of the city |

Multi-component interventions can comprise a range of different social activities, information and support, often delivered in many different locations including the homes of older people. The challenges of evaluating multi-component programmes targeted at promoting the mental health and independence of older people is one factor in the mixed evidence identified in this review. The studies here from Japan, Australia and the Netherlands illustrate this challenge in translating some of the positive benefits of engagement with programmes into changes in mental wellbeing, independence and loneliness outcomes at the end of any evaluation.

In Japan, **Saito et al. 2012(+)** evaluated the effects of an intervention programme aimed at preventing social isolation, loneliness, depression, and improving subjective well-being among older people who had moved to Tokyo over a 2 year period. The intervention consisted of 4 two-hour sessions, conducted once every 2 weeks, providing an opportunity for participants to meet each other, exploring the effects of their relocation experiences, identifying information needs, and offering a sightseeing tour of the city. The average age of participants in the intervention group was 73 years; 21 were allocated to the intervention group with 42 in the control group. 40% of participants were men and 45% were married. The study follow up was 6 months. There was a significant positive effect of the intervention on subjective well-being measured using the 10-item Japanese version of the Life Satisfaction Index – A scale LSI-A ($p = 0.039$) and also on social support ($p = 0.013$). Loneliness levels also significantly reduced. These were measured using the Ando-Osada-Kodama (AOK) loneliness scale, which is a modified Japanese version of the UCLA loneliness scale ($p =$

0.011). No statistically significant differences were found in social networks, and social activity scores.

Bartlett 2013 (-) examined the impact of three different programmes on loneliness and social support in older people living in Australia. The three programmes were 1) a fitness programme based on a range of exercises, including a swimming, as well as an arts programme (the Greenvale Programme) (42 participants, mean age 66 – range 54-93); 2) activities such as community forums, better integration of services for older people and development of an action plan and implementation of a volunteer buddy system (the Hervey Bay Programme) (15 participants; mean age 68 – range 42-84), and 3) the development of a culturally appropriate model of volunteer service (CAVS) delivery for older migrants to Australia (16 participants, mean age 79 – range 63-100). The study found no significant changes in loneliness or social support scores for the first two programmes. Loneliness, measured on the de Jong Gierveld Scale (de Jong Gierveld and van Tilburg 1999) did significantly decrease in the CAVS programme from 7.5 (Std Error 0.8) to 5.0 (Std Error 0.7). $p=0.001$. Social support, measured using the Duke Social Support Index (DSSI) (Koenig et al. 1993) also significantly increased in the CAVS programme from 2.4 (Std Error 0.1) to 2.7 (Std Error 0.1). $p=0.007$. However the results could not be attributed to the programmes as staff may have expressed their own opinions when completing data collection instruments on behalf of older people who did not speak English.

In the Netherlands a quasi-experimental study **Honigh-de Vlaming 2013 (+)** involving more than 1,800 people (mean age 74) examined the effects of a multi-component intervention called *Healthy Ageing*. This consisted of a mass media campaign, information meetings for interested local older people, psychosocial group courses for people with mental health problems (mild depressive symptoms) or chronic diseases, social activation through a community-based Neighbours Connected intervention and training of intermediaries (homecare nurses, municipal advisors, and volunteers) to improve recognition of loneliness.

At two year follow-up, the intervention group scored more favourably than the control group on The Loneliness Literacy scale (Honigh-de Vlaming et al. 2014) subscales : motivation mean scores 2.98 s.d +/- 0.74 vs 3.07 s.d. +/- 0.77 (relative effect size -4.4%, 95% CI-8.3- -0.7) $p<0.05$, perceived social support mean scores 2.07 s.d. +/- 0.77 vs 2.17 s.d. +/- 0.80 (relative effect size -8.2%, 95% CI-13.6 - -2.4) $p<0.05$ and subjective norm mean scores 2.44 s.d +/- 1 vs 2.65 s.d. +/- 1.00 (relative effect size -11.5%, 95% CI-17.4 - -5.4) $p<0.05$.

However, no long term significant effects were observed for social support or experienced loneliness between the intervention and control groups. The authors concluded that two years was in fact an insufficient time to expect to see changes in final outcomes from this complex intervention.

Evidence Statement 1.2: Participation in single location, multi-component activity programmes

There is weak evidence from 2 small studies (Mehta 2004 -, Rosenbaum 2009 -) to indicate that there may be benefits to mental wellbeing associated with the participation of older people in multiple activities that are organised in fixed locations, such as cafes and older people's activity centres. One potential additional limitation was the low rate of participation of men in these programmes.

Rosenbaum et al 2009 -, UBA, USA reported that 30% of customers surveyed at a not for profit café offering activities such as weight-lifting, yoga, art, computer classes and volunteering opportunities, experienced restoration (a reduction in mental fatigue and an improvement in mental wellbeing). Individuals who volunteered in the café were more likely to have high levels of restoration than those that did not achieve restoration) $P < 0.001$). **Mehta 2004, -, UBA, Singapore** looked at the psychological well-being of 12 older adults aged 60 and older who participated in many different activities at a senior centre activity programme. Life satisfaction and happiness improved in people who had attended for more than 18 months there was no improvement in people who had attended for less than 6 months (new members). (No statistical analysis reported).

While both of these studies are from outside the UK these types of multi-component interventions can be seen in a UK context.

Table 1.2 Characteristics of Studies in Evidence Statement 1.2: Participation in multi-component activity programmes in dedicated spaces for older people

| Author Year Country | Quality rating | Study type | Sample size | Intervention content |
|--|-----------------------|-------------------------------------|--|----------------------------------|
| Mehta 2004 Singapore | - | Uncontrolled before and after study | 12 | Senior centre activity programme |
| Rosenbaum 2009 US | - | Uncontrolled before and after study | 90 (84% between the ages of 60 and 89) | Activity café for older people |

Multi-component intervention programmes can also be delivered in fixed locations such as café's and in social centres (Table 1.2).

Rosenbaum et al 2009 -, UBA, USA used a convenience sample survey of 90 customers (84% between the ages of 60 and 89) to look at the benefits of going to a dedicated café for older people, where in addition to usual café fare it provided many daily activities, such as weight-lifting, yoga, art and computer classes and volunteering opportunities. 30% of customers surveyed perceived that they had been restored by participation in the café, measured using Hartig's 13-item Short-Version Revised Perceived Restorativeness Scale (SPRS) (Hartig et al. 1997). Restoration meant a reduction in mental fatigue and improvement in mental wellbeing. Volunteering personal time at the café was associated with achieving high levels of restoration. 14 of those who achieved high levels of restoration (51%) volunteered compared to 14 (23% of those that did not achieve restoration) $P < 0.001$. Taking a consumer interest lecture (74% versus 48%) or having a body fat screening (40% versus 16%) also significantly greater in the high restoration group. $P < 0.05$. 82% of participants were women making it difficult to assess whether intervention might benefit men and the lack of follow up over time also limits this study.

In the **Mehta 2004**, -, UBA , Singapore) the psychological well-being of adults aged 60 and older who participated in the 'Good Life Programme' activities at an older person's social

centre were also explored using mainly qualitative research methods. Two groups of programme participants were compared, one containing active regular centre programme participants (n=6) and another group including new members (defined as having participated for less than 6 months, n=6). Many different activities were provided ranging from knowledge-based and educational courses (cooking courses, balloon twisting) to social and recreational activities (farms visits, games, line dancing), physiological (massage facilities), interactional (intergenerational activities), personal wellness (manicure, pedicure, facial, do-it-yourself), as well as some limited health care (basic health screening, cancer screening).

Content analysis highlighted the differences in the life satisfaction and happiness levels between regular and new members after joining the Good Life Programme. Life satisfaction and happiness level were assessed using the Satisfaction With Life Scale (Diener et al. 1985) (Pavot and Diener 1993). Since joining the programme life satisfaction measured on a rating scale from 1 (lowest) to 9 (highest) increased by 3.7 points for people who had attended for more than 18 months (regular members); there was no improvement in people who had attended for less than 6 months (fresh members, no statistical analysis reported). 4 out of 6 regular members showed at least 44% increase in their life satisfaction level after joining the programme. The mean score change in happiness was 2.8 for the regular members and 0.2 for fresh members (no statistical analysis reported); 4 out of 6 regular members had shown at least a 33% increase in their happiness level after becoming programme participants and half of the regular members gave the maximum score for life satisfaction and happiness after joining the programme.

Evidence Statement 1.3: Mentoring for older people and signposting to activities

There is inconsistent evidence base on the mental well-being benefits to older people receiving mentoring support, including signposting to activities and services from trained adult volunteers in 1 uncontrolled before and after study and 1 non-randomised controlled study (Greaves 2006 -, Dickens +).

In the UK (**Greaves 2006 -, UBA, UK**) reported that mentoring by trained adult volunteers led to significant improvements in reported levels of social support at 12 month follow up ($p=0.02$) and in mental health at 6 month follow up ($P<0.005$), but at 12 month follow up these improvements were no longer significant. Evidence from

one larger scale non-randomised controlled study of the same intervention (**Dickens 2011 +, NRCT, UK**) at 6 month follow up reported no impact on mental wellbeing and no evidence of any difference in social support outcomes with the exception of one measure, ‘getting along with others’ which deteriorated in the intervention group.

Both studies were conducted in the UK; it should be noted that in both evaluations the study population had poorer mental health and physical health status than the general population of older people. The interventions may also have been implemented in an inconsistent way by different community mentors which may also have impacted on outcomes.

Table 1.3: Characteristics of Studies in Evidence Statement 1.3: Mentoring

| Author Year Country | Quality rating | Study type | Sample size | Intervention content |
|------------------------------------|-----------------------|-------------------------------------|--|---|
| Dickens 2011 UK | + | Non randomised controlled study | 200 (intervention) 195 (control) 69% female BME= 10%; Mean age 71.8 intervention; 69.8 control; | Mentoring intervention targeting socially isolated older people, mentors offered the relevant social skills and capabilities for social participation |
| Greaves 2006 UK | - | Uncontrolled before and after study | 172 (intervention); 76% female; mean age 77; | Adult volunteers were trained as mentors to work closely with older adults, aiming to engaged them in programmes of creative, exercise and/or cultural activities, with an emphasis on social interaction |

Two studies included in the review examined the psychosocial effects of mentoring interventions, including signposting services to older people. The second study was one of a number of projects that were evaluated as part of national evaluation of LinkAge Plus, an initiative to ‘*test the limits of holistic working between central and local government and the voluntary and community sector to improve outcomes for older people, improving their quality of life and wellbeing*’ (Davis and Ritters 2009). However, an important caveat with

these evaluations, is that in both cases more than 50% of the study population were reported to have clinical levels of depression rather than being in good mental health.

The first uncontrolled before and after study, **Greaves 2006 (-)** implemented in Devon, UK - a community based mentoring intervention - involved 172 community-dwelling older adults (aged 52-96), 76% female. It examined changes in quality of life and social support, as well as in depressive symptoms. The intervention was delivered by trained adult volunteers, who then became mentors who could work closely with older adults, aiming to rekindle their interest in life by engaging them in creative, exercise and/or cultural activities of their choice, with an emphasis on social interaction. Activity-based interventions were provided either directly by the mentors (who were based at a local voluntary sector Healthy Living Centre) or they sign-posted older people to existing community based activities. While the typical number of contacts per client is not reported, older people initially received visits from mentors on a weekly basis, supplemented by regular telephone contact. This was gradually diminished as participants become more confident. At 6 months, there were significant improvements in positive mental health measured using the SF12 mental health component (MD = 3.02, CI 95%: 1.01 to 5.04, $p < 0.005$). This, in part, may be because at baseline 53% of the study population had a diagnosis of clinical depression. At 12 months this positive SF12 mental component change was not maintained, with a mean improvement of 0.71 (not significant). At 6 months there was no significant improvement in social support measured using the Medical Outcomes Social Support Scale (mean scores 1.98 (1.11 s.d) to 2.04 (1.03 s.d), but by 12 months, there were significant improvements in social support mean scores 1.88(1.11 s.d) to 2.08 (0.99 s.d) $p=0.02$. Qualitative data showed that the intervention was well-received by participants, with improvements in psychosocial benefit (social activity, self-worth, optimism about life) and depressed mood being the most widely reported.

The mentoring intervention evaluated by Greaves was subsequently expanded in the same county of Devon, a non-randomised controlled trial **Dickens et al 2011 (+)**. Again the community mentoring intervention aimed to increase mental health and social engagement for socially isolated older people or those at risk of becoming socially isolated. The intervention is not described in detail in the text but the paper states that mentors offered support to provide older adults with the relevant social skills and capabilities for social participation for 12 weeks to make sure positive behavioural changes would continue even after the intervention was ended. The study matched 200 older adults receiving the mentoring

programme (mean age 71.8) with 195 people (mean age of 69.8) in a control group from GP practice lists. Unlike the earlier study, follow up was only for six months.

At the six-month follow-up, there was no significant difference between the groups in mental health using the SF-12 mental health component score: (mean between group difference 0.8 (S.D: 1.5 to 3.2) $p=0.48$). There was also no significant difference in Medical Outcomes Study Social Support Survey MOS-6 scale scores (mean score 0.03 S.D: -0.2 to 0.2 $p=0.75$). There were no differences in social activities using four items from the RAND Social Health Battery, while indicators of social support such as the number of friends/family, clubs/groups, and get together with friends/family showed no significant difference. The one exception was the indicator 'getting along with others' which significantly deteriorated in the intervention group (Odds Ratio 0.6, Inter Quartile Range (0.4 to 0.9) $p<0.01$). The authors indicated these poor results could be because the control group had significantly better levels of mental, physical, and social health, relative to the intervention group at baseline. The intervention may also have been implemented in an inconsistent way by different community mentors, which may have masked positive outcomes of the intervention for some service users.

Evidence Statement 1.4: Educational health promotion interventions delivered by volunteers and peers

There is weak evidence from two uncontrolled before and after studies (Collins et al 2006 -, Malekafzali 2010 -, that volunteer and peer delivered educational health promotion programmes can positively benefit the mental wellbeing and social participation of older people.

Collins and Benedict 2006 (-), UBA, USA evaluated the effectiveness of an educational health promotion intervention delivered to 339 people (mean age 73.20) at day centres for older people and retirement housing villages in Nevada, USA. There were significant improvements in Mastery Scale scores ($t= 12.08$, $df = 323$, $p <0 .001$). Loneliness also decreased ($t =29.20$, $df = 329$, $p <0.001$).

Malekafzali et al. 2010 -, UBA, Iran assessed the effectiveness of community volunteer

delivered health promotion knowledge to 101 older people (59% aged between 60-and 69 and 41% aged 70 plus) in the community through different mechanisms including home visits and face to face education events and referrals to physicians. After 9 months there were significant increases in women aged 70 and older, not being worried about the future (p=0.004), and more women aged 60-69 being happy most of the time (p=0.01).Happiness also improved for men (p=0.05) and there was a significant increase in participation in group activities and clubs among women (p=0.00).

While these programmes are delivered outside of the UK, health promoting initiatives delivered by volunteers can be implemented in a UK context. The majority of participants in both studies were women, less is known about their impact on men.

Table 1.4: Summary Table for Evidence Statement 1.4: Educational health promoting interventions delivered by volunteers and peers

| Author | Quality rating | Study type | Sample size | Intervention content |
|-----------------------------|-----------------------|-------------------------------------|--|---|
| Year | | | | |
| Country | | | | |
| Collins 2006 US | - | Uncontrolled before and after study | 339; 80% women, mean age 73.2, 68% white, 10% Hispanic | Peer and volunteer delivered educational health promotion programme |
| Malekafzali 2010 Iran | - | Uncontrolled before and after study | 101, 76% women, mean age 70 | Peer and volunteer delivered educational health promotion programme |

Collins and Benedict 2006 (-) used an uncontrolled before and after study to evaluate the effectiveness of the ‘Seniors CAN’ educational health promotion intervention implemented at 20 sites, largely day centres for older people and retirement housing villages, across rural and urban Nevada, USA. It comprised a 16 week course (2hrs per session) for volunteer peer educators and on-site staff. It was taught interactively to promote participation and included 15 lessons on topics including nutrition and food; personal safety, financial strategies to manage limited resources; general wellness and productive ageing. It was delivered to 339

people between the ages of 52 and 93 (mean=73.20, SD 8.64), 80% female; 68% white. 10% of older people were taught in Spanish.

At the end of the course there were significant improvements in score on the Mastery Scale (Pearlin and Schooler 1978) from a mean score of 24.96 +/- 0.28 to 27.01 +/- 0.25 ($t = 12.08$, $df = 323$, $p < 0.001$). Loneliness, measured using the four item Revised UCLA Loneliness Scale (Russell, Peplau and Cutrona 1980), decreased from a mean score of 8.64 +/- 0.10 to 7.86 +/- 0.09 ($t = 29.20$, $df = 329$, $p < 0.001$). However it should be noted that there was poor internal consistency for loneliness scores casting doubt on score validity. The authors also noted that, while all participants benefited, minority participants with low incomes and those with higher formal educational levels had the greatest reductions in loneliness. They argued that this suggests that the programme may have the greatest impact on those at higher risk of health problems. While the study supports the idea of rolling out health and wellness programmes, it was uncontrolled with a convenience population sample and a low participation rate by men. Moreover, no long term data on effectiveness were collected. The precise role played by the volunteer peer educators, as opposed to on site staff at day centres is not clear.

In Iran, **Malekafzali et al. 2010 (-)** assessed the effectiveness of an educational intervention designed to promote the health of older people. A group of community volunteers attended a four-day training workshop where they were instructed on how to pass on health promotion knowledge to older people in the community. This was done through a mixture of home visits, face to face health education events, leaflets and referrals to physicians.

The trained volunteers worked with a group of 101 older people (76% women and 24% men) from the Ekbatan Complex, which is a modern planned self-contained town about 5 kilometres from the centre of Tehran. Within the 9-month period of the intervention, each participant received at least four home visits. The effect of the intervention was measured by a questionnaire (provenance unknown) which included items related to mental health, leisure time, group activity and nutrition.

Indicators related to mental health - having a meaningful life and a feeling of happiness – for women increased after the intervention ($p = 0.00$). For women aged 70 and older, not being worried about the future, was significantly better after the intervention ($p = 0.004$) (increase size not reported). While before intervention 53% of women aged 60-69 reported that they were happy most of the time, this increased to 78% after intervention ($p = 0.01$). There was

also a significant increase in group activities among older women after the intervention (from 16.7% before the intervention to 61.5% following the intervention ($p=0.00$). The only benefit for men was a significant increase in the feeling of happiness after the intervention (values not reported $p=0.05$).

Evidence Statement 1.5: Participation in a singing programme

There is evidence from four studies on the impact on mental wellbeing of participating in choirs and other singing groups. There is strong evidence from **Coulton et al 2015 (++)**, **pilot RCT, UK** that participation in a 14-week professionally led community choir group has a positive impact on mental wellbeing. 131 of 258 people over the age of 60 (mean age 69.2, 84% female, 98% white) were allocated to singing groups with the remainder in a wait-list control group. At 6 month follow up there was a significant improvement in SF-12 mental health component scores of 2.35 $p<0.01$ for the intervention group compared to the control group.

There is moderate evidence from **Cohen et al 2006, 2007 (+)**, **quasi-experimental study, USA**, on the positive impact of regular participation in a professionally conducted choral group on the mental wellbeing of 90 community dwelling older people (mean age 79, 78% female, 92% White). At 12 month follow up a significant difference in morale was seen with less deterioration in the intervention group $t(125) = -1.92$; $p<0.06$. This was maintained at 2 year follow up (**Cohen et al 2007 +**). The comparison group also reported a more significant decrease in weekly activity than the intervention group $t(140) = -4.62$; $p<0.01$.

There is weak evidence from an eight-week singing programme (**Davidson 2013, -, UBA, Australia**) participation in a singing group was not associated with statistically significant improvements in positive mental health or reductions in loneliness.

One of these programmes evaluated (**Coulton et al 2015 ++**) is delivered in the UK in more than 40 locations; other voluntary sector delivered group singing programmes are also found in the UK

Table 1.5: Characteristics of studies in Evidence Statement 1.5: Participation in singing groups and choirs

| Author Year Country | Quality rating | Study type | Sample size | Intervention content |
|--|-----------------------|-------------------------------------|--|---|
| Cohen 2006 US | + | Quasi experimental study | 90 (intervention) 76 (controls) 78% female; mean age 79; 92% white | Participation in a professionally led choral singing group |
| Cohen 2007 US | + | Quasi experimental study | 90 (intervention) 76 (controls) 78% female; mean age 79; 92% white | Participation in a professionally led choral singing group |
| Coulton 2015 UK | ++ | Pilot RCT | 131 (intervention) and 127 (controls). Mean age 69, 84% female, 98% white. | Participation in singing group in community venue led by professional facilitator |
| Davidson 2013 Australia | - | Uncontrolled before and after study | 29 (intervention) 58% women, mean age 76 | Participation in singing group at community centre led by experienced musician |

There has been interest in the potential role of participation in group singing activities on mental health and wellbeing with qualitative research in the UK pointing to positive benefits for older people (Skingley and Bungay 2010, Clift 2012). Recently **Coulton et al 2015** (++) , in a pilot randomised controlled trial evaluated the impact of participation in a 14-week professionally led community choir group on mental wellbeing. 131 people with divided into 5 singing groups delivered in community venues in east Kent. A waiting-list control group of 127 people received no active intervention. There were no significant differences in the characteristics of the two groups at baseline – overall the population had a mean age 69.2, 84% were female and 98% were white and 8% had depression. There was a significant improvement in mean SF-12 mental health component scores for the intervention at 6 months compared to the control group: mean difference 2.35 (0.06 - 4.76) P=0.05. In the intervention group SF-12 mental health scores improved from 48.8 (46.8 – 50.8) CI to 52.3 (50.7 – 54.0) compared with 50.0 (47.9 – 52.2) to 49.9 (48.2 – 51.7) in the control group. The

3 month mean difference was greater: 4.77 (2.53 – 7.01) $p < 0.01$. While these results are promising the authors noted that the generalisability of the intervention may be difficult to judge given that the intervention was delivered mainly to white women in a small rural geographical area. They also indicated that the benefits of the intervention may have been due to group interaction rather than to singing per se, They also noted that the population was self-selecting group of people who were interested in singing and engagement with other groups may be different.

In the US **Cohen et al 2006 (+)** in a quasi experimental study evaluated the impact of regular participation in a choral group directed by a professional conductor from a music academy on the mental wellbeing of 90 community dwelling older people (mean age 79, 78% female, 92% White) in Washington, D.C. They were compared with 76 older people (mean age 79.5, 80% female, 93% White) who did not receive the intervention. The intervention included weekly singing rehearsals for 30 weeks, as well as public performances several times during the intervention period.

At 12 month follow up a significant difference in morale, measured using the Philadelphia Geriatric Centre Morale Scale (Lawton 1975), between the two groups was seen, $t(125) = -1.92$; $p < 0.06$. Both groups experienced deterioration in morale but this was less in the intervention group. Mean morale scores decreased from 14.15 (SD 2.42) to 14.08 (SD 2.66) in intervention group and from 13.51 (SD 3.07) to 13.06 (SD 3.29) in the control group. The difference in morale scores at baseline between the two groups was not significant. It should though be noted that the comparison group had significantly greater levels of loneliness than the intervention group at baseline ($p < 0.05$). Benefits to the intervention group in terms of morale were maintained at 2 year follow up (**Cohen et al 2007 +**). The intervention group had a slightly greater decrease in loneliness measured using the Loneliness Scale-III (Russell 1996): intervention 35.11 to 34.6; comparison 38.26 to 37.02. This maintained the significant difference in loneliness seen between the two groups at baseline.

The comparison group also self reported a more significant decrease in level of weekly activity than did the intervention group. The average number of weekly activities for the intervention group went from 5.37 at baseline to 4.29 12 months later. The comparison group reported a decrease from 4.88 to 2.58, $t(140) = -4.62$; $p < 0.01$. It can also be noted that the studies also looked at the impact on the use of health care resources over both one year and

two periods observing a lower use of health care resources and doctor visits by the choral singing group.

An uncontrolled before and after study in Australia **Davidson 2013 (-)** evaluated the effect of a singing programme designed for community-dwelling older adults on their health and wellbeing in Australia. An experienced community musician at a local community centre led singing group sessions over 8 weeks. Each weekly session started with vocal and physical warm-ups followed by singing songs popular in Australia in the past 60 years. Nineteen participants were recruited through a community newspaper advertisement and 17 were recruited from older people making use of a home help service provider (Silver Chain). The analysis was based on 29 intervention completers only.

For 16 participants recruited through a community newspaper advertisement there were no significant differences in SF-36 Mental Health component scores reported pre and post intervention: 86.3 s.d. +/- 11.4 and 82.0 s.d +/- 15.1 (p valued not reported). For the 13 participants receiving home help services there were also no significant difference is the SF-36 Mental Health component scores reported pre and post intervention: 77.7 s.d +/- 13.5 and 73.0 s.d. +/- 21.2 (p values not reported).

Vitality scores on the SF-36 fell significantly in the community newspaper recruited group from 72.5 +/- 11.0 to 62.1 s.d. +/- 17.3 p=0.03. There were no significant differences in vitality scores for the 13 participants recruited through the home care services. No significant differences in loneliness scores using the UCLA loneliness scale (Russell 1996) pre and post the singing intervention were found for participants recruited through the community newspaper or through home help service (values are not reported in the paper). However, qualitative study interviews (which also included responses from participants in receipt of home help services) showed most participants found the experience positive during and after the intervention: 68% frequently felt an improved sense of well-being during and after the intervention and 77% of the participants reported gains in self-confidence as a result of performing.

Evidence Statement 1.6: Using a national arts festival celebrating creativity in older people

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| There is weak evidence from an exploratory study in the Republic of Ireland that |
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evaluated a national arts festival attracting 100,000 people called Bealtaine, that celebrated creativity in older people each year (**O’Shea et al 2012, -, exploratory and cross sectional survey, Ireland**). Nearly 90 % of participants found that participation in Bealtaine improved their quality of life, as well as encouraged their personal development in terms of enhanced learning and organisational skills. Furthermore, more than 90% of older participants reported in surveys that social contacts were increased and over 80% said that they had better engagement with the local community.

Such an arts festival could be implemented in a UK context; arts and health projects for older people, including cultural events, have been delivered in the UK.

Table 1.6: Characteristics of Studies in Evidence Statement 1.6: National Arts Festival celebrating creativity in older people

| Author | Quality rating | Study type | Sample size | Intervention content |
|---------------------------|-----------------------|--|--|--|
| Year | | | | |
| Country | | | | |
| O’Shea 2012 Ireland | - | Exploratory and cross sectional survey | 235 older people postal questionnaire and 26 face to face interviews; 187 postal questionnaires of national organisers of arts festival activities | National arts festival – the Bealtaine |

O’Shea 2012, - exploratory and cross sectional survey, Ireland used an exploratory study to evaluate a month long national arts festival called *Bealtaine* (the Gaelic word for the May Day Festival) that celebrated creativity in older people each year (approximately 100 000 people across the country participated, mainly retired older people 65+). The festival encompasses many art-forms and includes both long-standing professionally facilitated arts programmes, sometimes using international co-ordinators and one-off events linked to local organisations. The 2014 event also took people to cultural events in Spain (Age and Opportunity Ireland 2014). It is organised by a national Irish charity Age and Opportunity.

Each year there is a unifying theme for the festival which various organisers across the country can subsequently use, if they wish, as a focus for their own event. Local authorities, arts centres, libraries, active retirement groups, care settings and community groups from every part of the country can run Bealtaine events that celebrate creativity in older age. A postal survey of all 435 organisers of Bealtaine events across the country was undertaken (43 % response rate). Participant postal questionnaires for older people were also sent to one randomly selected Active Retirement Association (ARA) in each county in Ireland. The ARA was asked to distribute the questionnaire to all of its members and a stamped addressed envelope was provided for the return of completed questionnaires to the researchers. 235 returned the questionnaires – 100% response rate in some ARAs. 26 face to face interviews with older people were also held. Nearly 90% of participants found that participation in Bealtaine improved their quality of life, as well as encouraged their personal development in terms of enhanced learning and organisational skills. Furthermore, more than 90% of older participants reported that social contacts were increased and over 80% said that they had better engagement with the local community. However, due to the descriptive and cross-sectional nature of the study, there were limited possibilities to measure the impact of the intervention.

Evidence Statement 1.7: Using arts to promote and protect mental and wellbeing

There is moderate evidence from 10 papers covering 9 studies (Bedding 2008 -, de Medeiros 2011 +, Eyigor 2009 -, Creech 2013/Hallam 2014 +, Haslam 2014 -, Lee 2010 ++, Seinfeld 2013 +, Sole 2010 -, Travers 2011-,) supporting a range of different art and music related interventions in promoting and protecting the mental wellbeing of older people. These studies are in addition to the evidence seen on participation in professional choirs seen in evidence statement 1.5 and participating in an arts festival in evidence statement 1. 6.

Lee 2010 ++, RCT, Hong Kong explored the effects of a music listening intervention using MP3 players on the quality of life of 70 community dwelling older adults (mean age 76) reporting significant improvements in vitality, social functioning, emotional role and mental health after 4 weeks ($p < 0.006$). **Travers and Bartlett 2011 (-), UBA,**

Australia looked at the impact of a nostalgic radio station on older listeners mood (mean age 79), loneliness and quality of life. While there were no significant changes in loneliness or social isolation, there were significant improvements on the Quality of Life- Alzheimer Disease scale. **Haslam and colleagues (2014) (-), RCT, Canada** examined the effectiveness of novel forms of song-based reminiscence compared to story reminiscence for 40 people (mean age 85.5 to 88.5 in 3 groups). There were significant increases in life satisfaction after 6 weeks: secular singing group ($p=0.005$), religious song group ($p=0.018$) and story reminiscence groups ($p=0.01$).

Creech 2013/Hallam 2014 +, quasi experimental study, UK explored how participation in making music might support the social, emotional and cognitive wellbeing of older people. Findings suggest those actively engaged in making music exhibit higher levels of wellbeing than those engaged in other group activities (effect sizes ranging from 0.11 to 0.19). **Seinfeld 2013 +, quasi-experimental, Spain** evaluated the impact of weekly piano lessons and daily training on cognitive function, mood and quality of life in 13 older adults (60+). Quality of life outcomes increased compared to controls but the study was not powered to test statistical significance.

Sole et al 2010 (-), UBA, Spain, examined the impact of different types of music activities (choral singing, music appreciation classes and preventive music therapy) on quality of life of 83 healthy older adults (83% women, mean age 72.6). Non-significant improvements in new friendships, self-satisfaction, perceived usefulness and optimism were seen in all three groups. **Eyigor et al (2009) (-), RCT, Turkey** examined the impacts of group-based Turkish folklore dance for healthy women aged 65 and over. Over 8 weeks, there was a significant improvement in mental health in the dance group ($p<0.05$). There were no significant differences in vitality, social functioning and emotional role.

de Medeiros et al. 2011 (+), RCT, US assessed the effectiveness of a structured autobiographical writing workshop on autobiographical memory, mood and self-concept in older adults. 51 older adults (age range from 67–96 years) were randomly assigned to one of three groups: an autobiographical writing workshop and two control groups – a reminiscence group or a no-treatment control group. Findings

indicated that self-ratings of overall well-being decreased over time across groups, but the authors did not believe that the study had a detrimental impact on participants.

In a small qualitative study **Bedding and Sadlo (2008)**,-, **exploratory observational pilot study, UK** 6 older retirees (aged 65 to 84) were interviewed about their experiences in community art classes. The participants described painting as enjoyable, rewarding, satisfying and relaxing. It brought a sense of achievement and boosted their confidence and helped them to manage negative emotions. It also helped to socialise with other people as a social club.

All of these music and art interventions potentially could be delivered or adapted for delivery to a UK context.

Table 1.7 Characteristics of Studies for Evidence Statement 1.7: Using arts and music to promote and protect mental and wellbeing

| Author Year Country | Quality rating | Study type | Sample size | Intervention content |
|--|-----------------------|---------------------------------------|--|---|
| Bedding 2008 UK | - | Exploratory observational pilot study | 6 (4 women, mean age 75) | Community art classes |
| De Medeiros 2011 US | + | RCT | 18 in writing workshop 18 oral reminiscence group 15 no intervention (60% women, mean age 80) | Autobiographical writing workshop and oral reminiscence |
| Eyigor 2009 Turkey | - | RCT | 19 intervention 18 control (100% women, mean age 73.5) | Group Turkish folklore dance |
| Creech / Hallam | + | Quasi-experimental study | 398: Intervention groups 102: Comparison | Various forms of musical activities |

| | | | | |
|------------------------------|----|--|---|--|
| 2013/14 UK | | | groups (81% female, range 50 -93) | |
| Haslam 2014 Canada | - | RCT | 40 across 3 intervention groups (54% women, mean age 85.5) | Secular songs, story reminiscence, religious songs |
| Lee 2010 Hong Kong | ++ | RCT | 31 intervention 35 control (55% women, mean age 76.3) | Music listening programme |
| Seinfeld 2013 Spain | + | Quasi experimental study | 13: intervention 16: control (53% women, mean age 69.3) | Weekly piano lessons |
| Sole 2010 Spain | - | Uncontrolled before and after controlled study | Choir: 52 Music appreciation: 19 Preventive music therapy 19 (83% women, mean age 72.6) | Choir, music appreciation class and preventive music therapy |
| Travers 2011 Australia | - | Uncontrolled before and after study | 154 listeners (71% women, mean age 79.9) | 'Silver Memories' bygone radio broadcast programme |

Lee 2010 ++, RCT, Hong Kong explored the effects of a music listening intervention on the quality of life of 70 community dwelling older adults with a mean age of 76 years. In the randomised controlled trial, 31 older adults participated in a 4 week music listening intervention programme which involved receiving training on how to use an MP3 player. Controls participated in a 'rest period' each week. The five types of music included meditative music, Chinese classical, Asian classical, Western classical and slow jazz. A total of 62 musical pieces were loaded onto an MP3 player to allow participants to choose their preferred music. At each weekly session each participant selected a piece of music which was played for 30 minutes. Each participant listened privately to their choice of music using earphones. 4 weeks after the end of the intervention and compared to the control group,

mental health components of the Chinese version 2.0 of the SF-36: vitality, social functioning, emotional role and mental health improved significantly ($p < 0.006$).

Travers and Bartlett 2011 (-) in an uncontrolled before and after study in Australia looked at the impact of a radio programme on older listeners mood, loneliness and quality of life. ‘Silver Memories’ was a radio service with the specific aim of addressing social isolation and loneliness among older Australians by broadcasting music (primarily), serials and other segments of radio programmes that were popular between the 1920 and 1950s. It was broadcast by a Brisbane community radio station, 4MBS Classic FM, and could be received using a custom built radio receiver (which was the case for everyone in the study) or also over the internet. 113 of 154 participants with a mean age of 79, 70% of whom were women and 60% who lived in the community, and did not show signs of dementia, agreed to listen to Silver Memories for at least an hour a day for three months. No significant change in loneliness or social isolation was reported, although there were significant improvements using the Quality of Life- Alzheimer Disease scale and a reduction in depressive symptoms using the Geriatric Depression Scale-5. The authors noted their measure of loneliness may not have been sensitive enough to pick up changes, while at baseline there were few people stating that they were socially isolated or lonely so that may also have contributed to the limited impact.

Creech 2013/ Hallam 2014 (+) in a quasi-experimental approach explored how participation in making music might support the social, emotional and cognitive wellbeing of older people. The study participants ranged from 50 to 93 (mean age not reported) and participated in community-based activities such as various forms of musical activities, as well as non-musical activities (e.g. language classes, social activities, yoga classes) in London. These groups were compared to explore the possible support of musical activities for experienced wellbeing in later life. Based on survey data retrieved (398 responses from participants of musical activities and 102 from those participating in other activity groups), the findings suggest that those actively engaged with making music exhibit higher levels of well-being than those engaged in other group activities, particularly in relation to having a sense of purpose, feeling in control and autonomous in their lives, and receiving affirmation through positive social relationships, although the effect sizes are small. A factor analysis approach was used and confirmed that subjective wellbeing seems to be underpinned by a 1) sense of purpose; 2) feeling in control and autonomous; and 3) receiving affirmation through positive social relationships that provide individuals with respect and status. There were statistically

significant differences between the groups on three factors: sense of purpose (effect size 0.19) $p < 0.0001$ control/autonomy (effect size 0.15) $p < 0.001$ and social affirmation (effect size 0.11) $p < 0.05$. In all cases the scores of those participating in the music groups were better indicating more positive responses.

These findings could be interpreted as indicating that engaging in music has additional value beyond other group work, perhaps because of the social nature of music making, the rewarding nature of performance and the impact of music on mood. Alternatively, the findings could be interpreted as showing that those individuals who had chosen to engage with music as opposed to other activities already had higher perceived levels of control, autonomy, sense of purpose and positive social relationships. However, as a sizeable proportion of the sample had been involved in making music prior to the research being undertaken, interpretation is complex. The study was also limited by its design which meant that no baseline data could be collected, only measures after exposure to music or other activities.

Seinfeld 2013 +, quasi-experimental, Spain evaluated the impact of learning to play a musical instrument on cognitive function, mood and quality of life in older adults. The intervention consisted of weekly piano lessons provided by a music teacher and individual daily training for 4-months ($n=13$) to adults with a mean age of 69.3 ± 2.03 . The training programme included components of learning musical theory, sight-reading and playing a keyboard. A group of individuals participating in other types of leisure activities (e.g. physical exercise, computer lessons, painting lessons) served as a control group ($n=16$). For the quality of life outcomes, measured using the WHOQOL-BREF (Anon 1995), psychological domain scores increased (pre-programme mean score and SE : 30.81 ± 0.53 ; post-programme mean score and SE : 29.50 ± 0.33). The scores of the control group tended to decrease or remain the same, but the study was not powered to detect a significant difference in Quality of Life outcomes.

Fatigue scores decreased in the piano group (pre-programme mean score and SE : 4.23 ± 1.20 ; post-programme mean score and SE : 2.92 ± 0.70), as well as the total scores on the Profile of Mood States scale (McNair, Lorr and Droppleman 1971) measuring six mood states (pre-programme mean score and SE : 117.70 ± 7.18 ; post-programme mean score and SE : 111.33 ± 6.23). It is noteworthy that within the control group, the opposite pattern was found - the

scores in the total score (pre-programme mean score and *SE*: 104.31 ± 3.14 ; post-programme mean score and *SE*: 106.93 ± 2.85) and fatigue (pre-programme mean score and *SE*: 2.13 ± 0.55 ; post-programme mean score and *SE*: 3.19 ± 0.58) increased overtime.

In a randomised controlled trial in Canada, **Haslam et al 2014** (-) examined the effects of traditional story-based reminiscence and novel forms of song-based reminiscences for 40 older adults either living independently or in retirement living or assisted care. The interventions were: secular song reminiscence (n=13 mean age 86.4, 7 Women, 6 Men), sharing and singing along with popular music from the 1920s to the 1970s and brief conversations about the songs; or religious song-based reminiscence (n=13, mean age 85.5, 7 Women, 6 Men) focused on Christian songs selected by a chaplain from the 1920 to 1970s. Each session lasted 30 minutes for 12 sessions, two times per week over 6 weeks. In the control group, 12 standard story reminiscence sessions (n=14) (mean age 88.5; 10 Women and 4 Men) were held twice per week. Each session lasted 30 minutes. The focus was on talking about past memories and experiences with other people in the group using props.

Over 6 weeks, in the three groups, there were significant increases in life satisfaction measured using the Satisfaction with life Scale (Diener et al. 1985) . This uses a 1 to 5 point scale where higher mean values indicate a stronger sense of wellbeing. All three groups improved significantly: secular singing group ($p=0.005$), religious song group ($p=0.018$) and story reminiscence groups ($p=0.01$). The largest improvement in life satisfaction was found in the religious song group from 3.8 to 4.0, while the secular song group improved from 4.5 to 4.6, with the story group improving marginally. It is worth noting that those in the secular song group already had the highest score prior to the intervention. Another limitation was that participants were recruited from three different living arrangements such as independent living, retirement living, and assisted care, but outcomes were not reported separately. It was not very clear where the interventions were held.

Sole et al 2010 UBA (-) examined the impacts of different music activities on quality of life in 83 healthy older adults with a mean age of 72.6. Most of the participants were women (83%), living with low incomes of €900-€1200 per month. The interventions consisted of three elements: choral singing (52 participants), music appreciation classes (12 participants), and preventive music therapy (PMTP) sessions at leisure centres (19 participants). Over 9 months, older adults in the choir group met weekly to prepare for performance in a concert. In the music appreciation group, older people participated in weekly educational sessions to

learn basic music concepts. Those in the preventive music therapy group practiced and rehearsed functional skills via music activities to promote and maintain their functions. Activities were not directly compared but there were non-significant improvements in new friendships, self-satisfaction, perceived usefulness, optimism. The authors attributed the lack of statistical significance to the high levels of health in participants at the start of the interventions, meaning that there was little room for further benefits. However, the authors indicated that musical activities can be helpful in keep the older adults healthy.

Eyigor et al (2009) (-), RCT, Turkey examined the impacts of Turkish folklore dance on the physical performance, balance, depression and quality of life in healthy women aged 65 and over who were physically active and able to perform activities of daily living independently but had no previous experience in strength or regular exercise training. 18 women took part in the Turkish folklore dance classes that were held three times per week with each session lasting one hour and facilitated by a senior folklore dance expert. 19 women in the control group did not receive any intervention. Over 8 weeks, there was a significant improvement in mental health in the dance group, measured using the SF-36 at post-test ($p < 0.05$). However, no significant differences were found in vitality, social functioning and emotional role in the intervention and control groups at follow-up assessments. The authors indicated that larger sample sizes with longer duration are needed and they also raised the issue of transferability of the Turkish folklore dance movements to other ethnic groups.

de Medeiros et al. 2011 (+) conducted a RCT in US to assess the effectiveness of a structured autobiographical writing workshop (AAW) on autobiographical memory, mood and self-concept in older adults. A group of 51 older adults (age range from 67–96 years) from the two retirement communities in Maryland were randomly assigned to one of three groups: autobiographical writing workshop ($n=18$), a reminiscence group (REM) ($n=18$) or a no-treatment control group ($n=15$). The AAW and REM groups met once a week for 90 minutes. Follow-up testing was carried out after 8 and 34 weeks on a range of memory, new episodic learning, and mood, personality, self-concept and quality of life measures.

A significant effect of time was also found on the number of pleasant memories reported ($F(1.45, 66.7)=25.6, p < 0.001$). Across groups, the number of ‘pleasant’ memories increased from the baseline to 8 weeks, and stayed high at 34 weeks. Even though the results for SF-36

showed no significant effect of group or a group by time interaction for the emotional well-being section of the SF-36, there was however a significant effect of time [$F(1.75, 84.13)=3.48, p=0.4$]. The findings indicated that self-ratings of overall well-being decreased over time across groups, but the authors did not believe that the study had a detrimental impact on participants.

Bedding and Sadlo (2008), -, exploratory observational pilot study, UK interviewed 6 older retirees (aged 65 to 84) about their experiences in community art classes using oil and water coloured paintings. Using interviews, the participants described painting as enjoyable, rewarding, satisfying, fun, and relaxing. It brought a sense of achievement and boosted their confidence and helped them to manage negative emotions. It also helped to socialise with other people as a social club. The authors mentioned that there were generalisability issues as all participants were white British retirees and future studies should look at more culturally diverse populations.

Evidence Statement 1.8: Support for older caregivers

There is weak but consistent evidence from 7 studies: 2 RCTs, 1 quasi-experimental study, 3 uncontrolled before and after studies, and 1 cross-sectional survey (Boise 2005 -, Ducharme 2012 +, Ducharme 2011 +, Greenfield 2012 +, Mui 2013 1, Savundranayagam 2011 -, Won 2008 -) that psychosocial educational interventions delivered through a variety of programmes to support older people who have informal family caregiving responsibilities, largely when caring with for people with dementia, can promote or protect their mental wellbeing. In addition an exploratory feasibility study on the use of music therapy to help family caregivers with relaxation, comfort and happiness suggests this intervention merits further evaluation Hanser et al 2011 (-).

Ducharme 2011, (+), RCT, Canada and **Ducharme 2012 (+), RCT, Canada** evaluated the effectiveness of a psychoeducational programme that can be delivered by lay people to help new caregivers adapt to their new role. In the 2011 study following intervention caregivers had significantly improved confidence in dealing with caregiving situations ($P<0.001$) and better self-efficacy ($P<0.001$). In the 2012 study caregivers had improved confidence in their ability to care ($P<0.005$) while

improvements in self efficacy tended to significance (P<0.06).

Boise et al 2005 (-), UBA, USA also evaluated an educational programme to empower family caregivers, reporting significant positive changes (in the desired direction) in emotional well-being at initial follow up and 6 months later.

Savundranayagam et al 2011 (-), quasi-experimental study, USA looking at the same programme found significantly lower levels of stress burden and objective burden at 6 weeks in the intervention group (unquantified). **Won 2008 (-), uncontrolled before and after, US** found significant improvements in caregivers psychological wellbeing (p<0.001). **Mui 2013 (-), uncontrolled before and after study, US** which provided support for Chinese caregivers and a survey analysis by **Greenfield 2012+, US** of the impacts on caregivers of participating in volunteer and education programmes found improvements in self reported mental wellbeing (both unquantified).

Hanser et al 2011 (-), uncontrolled pilot feasibility study, USA looked at a different type of intervention: the impact of a caregiver-administered music programme for family members who have dementia in an exploratory feasibility study. Caregivers rated an improvement in their own relaxation, comfort and happiness following the use of the music programme.

Although these studies were all conducted outside of the UK, the interventions could be delivered in a UK context and one of the manualised support programmes for caregivers is being trialled in a UK context.

Table 1.8: Characteristics of Studies in Evidence Statement 1.8: Support for caregivers

| Author Year Country | Quality rating | Study type | Sample size | Intervention content |
|---------------------------|----------------|-------------------------------------|-------------------------------|---|
| Boise 2005 | - | Uncontrolled before and after study | N=359. 78% women, mean age 61 | “Powerful Tools for Caregiving” Programme, an |

| | | | | |
|-------------------------------|---|---|---|--|
| US | | | | education program for family caregivers of older adults |
| Ducharme 2011 Canada | + | Randomised controlled trial | N=111, 70% women, mean age 60 | “Learning to Become a Family Caregiver” psychoeducational programme |
| Ducharme 2012 Canada | + | Randomised controlled trial | N=97, 82% women, mean age 60 | “Learning to Become a Family Caregiver” psychoeducational programme |
| Greenfield 2012 US | + | Cross-sectional survey | 5092 (responses received), mean age 70.5 | A survey of older people who volunteer as caregivers as part of lifelong learning and health ageing programmes |
| Hanser 2011 US | - | Exploratory pilot feasibility study | N=14, 63% women, mean age 75 | Caregiver-administered music program with family members who have dementia |
| Mui 2013 US | - | Exploratory uncontrolled before and after study | 19 (intervention) 72% women. mean age 72 28 caregivers | Pilot programme for older Chinese immigrants to provide emotional support and coping skills over the telephone to other older Chinese immigrants |
| Savundranayagam 2011 US | + | Quasi-experimental | N=115 (intervention) N=95 (control) 78% women, mean age 71 | “Powerful Tools for Caregiving” Programme, an education program for family caregivers of older adults |
| Won 2008 US | - | Uncontrolled before and after study | 165 (intervention), 90% women, mean age 62 | Community-based programme providing training by peers, self-care skill-building and self-efficacy enhancing, to adult informal caregivers |

| | | | | |
|--|--|--|--|-----------------------|
| | | | | of frail older adults |
|--|--|--|--|-----------------------|

Ducharme 2011(+) and **2012 (+)** used randomised controlled trials to evaluate the effectiveness of the ‘Learning to Become a Family Caregiver’ programme in Canada. This psychoeducational programme which was delivered by lay people following three days of training, focused on the acquisition of skills to help caregivers adapt to their new role. In both studies a third of the carers were retired spousal carers and there were no significant differences in population characteristics. In the 2011 study when comparing 62 caregivers (mean age 60.37 s.d. 13.12, 38.5% spousal carers) who completed the seven session manualised group course with 49 caregivers (mean age 62.75 s.d. 13.22, 32.6% spousal carers) who did not receive any psychological education or support, no significant difference in Informal Social Support, the frequency of support received by caregivers from family (excluding the ill relative), friends, and neighbours, measured using the 27-item Inventory of Socially Supportive Behaviours (Krause and Markides 1990), was found 3 months after the course ended. The ability of carers to have confidence in dealing with caregiving situations significantly improved ($p < 0.001$) using the Self Efficacy Scale (Kuhn and Fulton 2004); caregiver self-efficacy also significantly improved ($P < 0.001$) using the Revised Scale for Caregiving Self Efficacy (Steffen et al. 2002).

The 2012 study which had 97 (intervention group 61 carers, mean age 59.6 s.d. 11.94, 37.9% spousal carers and control group 36 carers, mean age 61.22 s.d. 12.45, 33.4% spousal carers) participants had similar findings, this time after a six month follow up. There were however other benefits to caregivers in terms of their ability to cope with caring: confidence in caregiving situations improved ($P < 0.005$) while improvements in self efficacy were almost significant ($P < 0.06$) The authors felt the intervention was limited by recruiting caregivers from memory clinics and the impacts may have been greater for caregivers who did come into contact with this specialist service. These studies were in contrast to earlier work by the same authors of another modulised caregiver education programme “Taking Care of Myself” (Ducharme et al. 2005) which did find significant informal and formal social support benefits for caregivers. However all these caregivers were adult daughter carers rather than spouses so the study was excluded from this review.

Boise (-), 2005 used an uncontrolled before and after study to evaluate an educational programme to empower family caregivers to reduce negative effects of caregiving and to

practice self-care. 359 individuals were initially in the study with 186 individuals providing pre and post programme data. The ‘Powerful Tools for Caregiving’ programme, an education programme for family caregivers of older adults, consisted of two half hour sessions, once a week over a 6 week period, where each class covered a different topic and taught ‘tools’ that provide useful techniques for improving caregivers’ emotions, self-care behaviours and self- efficacy. Each class also included a different relaxation tool, e.g., guided imagery, deep breathing, or ‘shoulder lift. A train-the-trainer approach was used to train professionals and community volunteers as class leaders and master trainers.

Significant positive change (in the desired direction) was reported in all areas of expected outcomes: emotional well-being, self-care behaviours, self-efficacy, and use and knowledge of community services. Compared to pre-intervention scores, mean 6 month post intervention scores measured using their own 3-item Positive Feelings about Caregiving Scale (PFCS) increased from 5.13 (SD 2.2) to 6.14 (SD 2.1) $t=-3.42$ $p<0.01$, while anger measured using measured using the 4-item Anger/Irritability scale (Pearlin and Mullan 1988) decreased from 3.51 (SD 2.2) to 2.41 (SD 2.0) $t=3.66$ $p<0.01$. Guilt, measured using the using a 4-item scale adapted from the Feelings of Not Doing Enough subscale of the Caregiver Guilt Scale (Kingsman 1992) also decreased from 3.23 (SD 2.5) to 2.52 (SD 2.1) $t=2.44$ $p<0.05$. The results of the study while positive are limited by study design and dropout rate of 28% and a low response rate for the six month follow up. It is not clear also how well the scales have been validated.

Savundranayagam 2011 (+) in a quasi-experimental study also evaluated the impact of the ‘Powerful Tools for Caregiving’ programme, in a study focused solely on spousal caregivers with a mean age of 71 in the intervention group. Using structural equation modelling intervention participants were found to have significantly lower levels of stress burden and objective burden than comparison group participants at the end of the six week intervention period. One limitation of both this and the Boise study is a lack of assessment on general mental wellbeing rather than on specific caregiver aspects of wellbeing.

One US uncontrolled before and after study, **Won 2008 (-)**, evaluated a community-based programme providing training, self-care skill-building and self-efficacy enhancing, to adult informal caregivers of frail older adults. 39% of the carers were aged 65 years or older with most being the spouses of the care recipient. The training was delivered over 6 weekly sessions by trained peers with social worker support. It was compared to a no-intervention

control group, examining the effects on psychological wellbeing. Psychological wellbeing on the mental health index-5 (MHI-5) (Berwick et al. 1991) scale improved significantly in these caregivers aged 65+ from 9.2 (+/- 2.0 s.d) to 10.3 (+/- 2.0 s.d, $p < 0.001$).

In the USA, **Mui 2013 (-)**, as part of an uncontrolled before and after study, used a survey to explore the effect of a pilot programme training older Chinese immigrants to provide emotional support and coping skills over the telephone –in Mandarin or Cantonese at least once per week to other older Chinese immigrants. The intervention consisted of intensive 72 hour-training with ongoing training sessions every 3-4 weeks. Twenty-eight caregivers who received support were assessed using the Brief Assessment Scale for Caregivers (BASC) in Chinese as well as other measures specifically designed for the program. As a group, these caregivers felt that Phone Angel volunteers reduced their stress and burden, listened well, and made good suggestions when problems arose. (However figures were reported in an unpublished working paper which it was not possible to obtain)

In the US, a survey by **Greenfield 2012 (+)** examined whether participating in community-based volunteer and educational activities is more beneficial to caregivers than non-caregivers. A survey of randomly selected participants of the US national OASIS (lifelong learning, healthy living and social engagement) programmes consisting of volunteer and educational activities provided by older people in the community was conducted in 18 locations. A sample of 5092 OASIS volunteers, of which 1022 were also caregivers, with an average age of 70.5 years, provided information about self-perceived benefits of the programme. The benefits were assessed by the six items designed to measure psychosocial benefits of engagement. The findings indicated that caregivers were more likely to report benefits on all measures ($p < 0.05$). Results regarding the caregiver status on the summative psychosocial benefit score were statistically significant, with caregivers reporting more benefit than non-caregivers ($\beta = 0.64$, $t = 3.85$, $p = .0013$). The analysis also showed that the adjusted mean benefit score for caregivers was 20.63 and 19.99 for non-caregivers (significance not reported in paper).

The US study by **Hanser 2011 (-)** looked at the impact of a caregiver-administered music programme for family members who have dementia in an exploratory feasibility study. The music-facilitated stress reduction programme required a music therapist to train the 14 family caregivers in the study to discuss musical selections appropriate for relaxation, and to

rehearse how the family member with dementia could be engaged with the music. Families were asked to listen to a tailored CD together on 3 days each week. The emphasis was on using music from the 1930s to the 1960s. Caregivers rated their own relaxation, comfort and happiness, as well as their perception of these states in their care recipients using a visual analogue scale from 1 to 10. Both care recipients and caregivers experienced enhanced relaxation during the treatment period by an average of 1.96 and 2.55 points, respectively. Care recipients and caregivers demonstrated an average increase of 1.60 and 1.86 points, respectively, in comfort level. Happiness increased by 0.93 points in care recipients and 1.45 points in caregivers. Overall, caregivers experienced a greater benefit than care recipients in all three areas by an average of 1.37 points. Most of these changes in self reported wellbeing measures for individual carers were reported to be significant.

Cluster 2: Intergenerational activities and volunteering

Evidence Statement 2.1: School-based intergenerational activities

There is moderate consistent evidence on the effectiveness of school-based intergenerational social activities linking children and young people with older people in improving the mental wellbeing of older people from 3 studies, 1 RCT, 1 quasi-experimental study and 1 qualitative study (de Souza 2007 ++, Fujiwara 2009 +, Herrmann et al 2005 +).

One RCT (**de Souza 2007, ++, RCT, Brazil**) of 266 older people (149 group participants and 117 controls) indicates that intergenerational small group-based activities led by teachers and delivered in the school setting can lead to improved family relationships 4 months after intervention ($p=0.03$). One controlled before and after study (**Fujiwara 2009 +, quasi experimental, Japan**) found evidence that intergenerational contact, involving older volunteers reading to children enlarged the social contacts of older people with non-related children ($p<0.001$). Further, there is evidence from a quasi experimental study (**Herrmann 2005 +, quasi-experimental, US**), involving 66 older people trained to provide life-skills training to high-school students. This study reported improved psychosocial development.

All of these studies were conducted in settings outside of the UK making it difficult to assess their applicability as a whole to a UK context, but intergenerational activities involving older adults volunteering in schools can be found in a UK context.

Three studies included in the review examined the different school-based intergenerational activities.

Table 2.1: Summary of Characteristics for Studies Included in Evidence Statement 1: School-based intergenerational activities

| Author Year Country | Quality rating | Study type | Sample size | Intervention content |
|------------------------------------|---------------------------|--------------------|---|--|
| de Souza 2007 Brazil | ++ | RCT | 149 (intervention) 117 (control); 61% women, mean age 69.5 | Intergenerational group-based activities in a school-based context |
| Fujiwara 2009 Japan | + | Quasi-experimental | 67 (intervention) 74 (control), 78% women, mean age 68 | The REPRINTS programme dedicated to educate and engage senior volunteers in picture book reading to young and school-aged children |
| Herrmann 2005 US | + | Quasi-experimental | 36 (intervention) 30 (comparison), 72% women, mean age 71 | Intergenerational program with older people providing life skills training to high school students |

In Brazil **de Souza 2007** (++) conducted a RCT with 266 older adults 60 years or older (149 in intervention and 117 in control) that examined a 4-month programme of intergenerational small group-based activities, in which older people shared their memories with younger people in a school context. The sessions (approx. 2 hours) were held once a week at school during class time. The intervention was compared to a no-intervention control condition. The results from the study showed that those in the intervention group were significantly more likely than those in the control group to report that “all or most neighbours help each other” (OR 2.27, CI 1.249–4.131, $p = 0.007$) and “all or most people are honest” (rather than “few

or none'') (OR 2.50, CI 1.26–4.93, $p = 0.008$), indicating higher levels of cognitive social capital. Furthermore, those in the intervention group were significantly more likely to report that their family relationships were good or very good (OR 2.61, CI 1.21–5.61, $p = 0.014$), as well as more likely than controls to report an improvement in family relationships (OR 3.79, CI 1.07–13.46, $p = 0.039$). In the intention to treat-analysis, the association was again in the same direction, but was not statistically significant.

In Japan **Fujiwara et al. 2009** (+) conducted a quasi-experimental study which examined the effects of the REPRINTS (Research of Productivity by Intergenerational Sympathy) intervention on senior volunteers' physical and psychological health, social participation, social networks, social support, and their cognitive functions. The REPRINTS programme was designed to educate and engage senior volunteers in picture book reading to young and school-aged children. A group of 67 older people (average age 68 years) from three study areas in Japan, attended a weekly training session over a 3-month period to learn about book selection and reading techniques. Following the completion of their training, the volunteers visited a number of selected elementary schools, kindergartens and child care centres to read picture books to the children. Data were collected on a number of physical health, mental wellbeing and social support dimensions 9 and 21 months after the collection of baseline data. The results showed that 56 volunteers who were active in the programme for more than nine months were significantly more motivated to continue participation in order to make new friendships compared to the 11 volunteers who withdrew from the programme before nine months (67.9% versus 27.3%, $p = 0.019$). Compared to controls there were no significant differences between volunteers and control group ($N=56$) in social activities or in providing social support to other family members. At nine month follow up there were no differences in frequency of contacts between volunteers and controls with the exception of communication with non-related or non-neighbourhood dwelling children which increased from a mean of 1.6 (between less than once a month and a few times per month) (± 1.7 s.d) to 3.3 (between one and two times per week) (± 1.1 s.d) versus 1.6 (± 1.8 s.d) to 1.4 (± 1.5 s.d) resulting in a significant difference between volunteers and controls ($p < 0.001$). At 21 month follow up for 37 volunteers still in the programme versus 60 controls, the frequency of interaction with children continued to increase significantly ($p < 0.001$) (precise figures not reported – approximate values: 3.8 versus 1.7).

In the US **Herrmann 2005 (+)** employed a quasi-experimental study with a group of senior citizen volunteers (66 participants between 60 and 81 years) to look at the impact of participation in an intergenerational program with high school students. Older people were trained to provide life skills training. Half of the trainers were assigned to teach a violence/anger-reduction curriculum, while the other group was assigned to teach a vocational-education and career-development curriculum. The groups of students consisted of 8 to 12 sixth grade (not stated in report but in the US this would normally cover students from ages 13 to 18). According to the results from this study, participation in intergenerational programming appeared to influence generativity among the volunteers (an indicator of psychosocial health according to, capturing the stage in adulthood when contributing to society and doing things to benefit future generations are important needs). The senior volunteers engaged in the violence/anger-reduction curriculum demonstrated significantly higher scores on the generativity component of psychosocial health measurement at post-test compared to the non-participants ($F(1, 54) = 10.37, p < 0.005, \eta^2 = 0.16$, large effect size). This significant change was however not found in the other group of volunteer trainers, nor for other measured components of psychosocial health (such as integrity of life experiences at the end of life, experienced by adults over the age of 60, according to the theory of Erikson), highlighting that the results from the study are inconclusive.

Evidence Statement 2.2: Intergenerational activities involving children outside of the school setting.

There is weak but positive evidence on the effectiveness of intergenerational social activities involving young children interacting with older people outside of the school setting in improving the mental wellbeing of older people in 3 studies (Kamei 2011 -, Marx 2005 - and Morita 2013 -).

Kamei et al. 2011 (-), quasi-experimental study, Japan evaluated the effects of the intergenerational interactions between older women (average age 75.6) and school-aged children as part of an intergenerational day program (IDP) which included a range of intergenerational group activities, such as communication facilitation games and handicrafts. In terms of health-related quality of life at 3 months and 6 months post programme compared to a separate volunteer group the older adults had

significantly improved mental health ($F [2.26] = 4.00, p= 0.030$).

There is evidence from an observational study (**Morita 2013 -, UBA, Japan**) of an intergenerational program targeting preschool children and older adults that intergenerational conversation was significantly higher in the socially-oriented programme group (i.e. the participants playing games together) than in the performance-based programme group (i.e. children singing or dancing; $p < 0.001$, no specific figures provided)

Marx et al 2005 (-), quasi experimental study, USA examined the usefulness of an intergenerational email pen-pals programme and an intergenerational face-to-face visiting programme for community dwelling older adults aged 80 to 86. At post-test after 6 months, regarding social network outcomes, 26% of those in the email pen-pal programme stated that they would like to continue to contact their pen-pals, while 74% were not interested.

All of these studies were conducted in settings outside of the UK making it difficult to assess their applicability as a whole to a UK context. Two of the studies were set in Japan where cultural values, including Confucianism, mean that children are taught to place value and respect on their elders, something that may not have the same resonance in the UK.

Three studies included in the review examined the psychosocial effects of different intergenerational activities involving children interacting with older people outside of the school setting.

Table 2.2: Summary of Characteristics for Studies Included in Evidence Statement 2: Intergenerational activities

| Author | Quality rating | Study type | Sample size | Intervention content |
|----------------|-----------------------|--------------------|----------------------------------|---|
| Year | | | | |
| Country | | | | |
| Kamei | - | Quasi-experimental | 14 older women, mean age 75.6; 8 | Intergenerational day social and activity programme |

| | | | | |
|-------------------------|---|-------------------------------------|---|--|
| 2011 Japan | | | programme volunteers controls, 7 school children | |
| Marx 2005 US | - | Quasi- experimental study | 38 (intervention) 27 control. 82% women, mean age 83 | intergenerational email pen-pals programme and an intergenerational face-to- face visiting programme |
| Morita 2013 Japan | - | Uncontrolled before and after | 11 (performance group) 14 (social orientation group); 80% women, mean age 85 | Intergenerational programme where older adults participated in singing, dancing and games with preschool children who visited an adult day care centre |

A study conducted in Japan by **Kamei 2011** (-) evaluated the effects of the intergenerational interactions between older women and school-aged children. This took place as part of an intergenerational day program (IDP) which included a range of intergenerational group activities, such as communication facilitation games and handicrafts. The intervention consisted of 22 program sessions conducted over a 6-month period. A group of 14 older women (average age 75.6 years), 8 programme volunteers (average age 68.6 years), and 7 school children (average age 9.9 years) took part in the intervention.

Data on the interactions between the generations was collected through participant observations and interviews. The older adults group was significantly more satisfied with the intervention than the programme volunteer group at 6 months ($t [20] = 3.66; p = 0.002$). The children's perception of older people was assessed and they were found to rate older adults highly but no significant differences in their perceptions were found before and after the programme. Older people were found to participate significantly more compared to the program volunteer's group ($M=16.7 \pm SD=4.1$ vs. $M=6.3 \pm SD=2.9; p<0.001$). In terms of health-related quality of life at 3 months and 6 months post programme older adults had significantly improved mental health ($F [2.26] = 4.00, p= 0.030$). Further analysis identified 5 older people who had Geriatric Depression Scale-15 scores that were above the cut off for depression and it was noted that these significantly reduced between the first involvement in the programme and at 3 month follow up. ($F [2.8] = 4.69; p= 0.045$).

In an exploratory observational study in Japan **Morita 2013** (-) examined the interaction styles of older adults (aged 71 to 101 years), 80% being women, following their participation in singing, dancing and games with preschool children aged 5 to 6 years who visited an adult

day care centre in Tokyo. The older participants of these intergenerational programmes were divided into two groups: performance or socially-oriented activities. Eleven adults were allocated to the performance-based intergenerational program (e.g. children sang songs and danced for the older adults) and 14 were allocated to the social-oriented intergenerational program (e.g. older adults and children played games together). The study suggested that intergenerational conversation was significantly higher in the socially-oriented programme group than the performance-based programme group ($p < 0.001$, no specific figures provided), indicating that social activities may be promising in promoting psychosocial prerequisites for meaningful interaction and reciprocity between generations.

In a small quasi-experimental study from the USA, **Marx 2005 (-)** examined the usefulness of an intergenerational email pen-pals programme and an intergenerational face-to-face visiting programme. Older adults aged 80 to 86 with a mean age of 83 years from a suburban federally subsidised apartment building participated in one or both programmes or self selected themselves to be in the control group ($N=65$). 27 enrolled in both the intergenerational e-mail pen-pal and visiting programmes, 11 in the intergenerational e-mail pen-pal programme only, 4 in the intergenerational visiting programme only, and 27 seniors who participated in neither programme served as a control group. In the email pen-pal group, computers were placed at a computer centre on the ground floor of their apartment building (complete with free technical support) and free one to one email tutorial sessions were offered. Sessions lasted from 45 minutes to one hour. The computer centre was open 24 hours per day. Older adults either chose to write the emails by themselves or asked for help in dictating their emails from their tutor. They would then push the send button on completion. In the visiting programme, a group of 20 elementary school children aged 7 to 11 visited once a month for 8 months. Each month, a reminder flyer was sent to each older person's mailbox 2 days prior to a meeting. Each visit lasted 90 minutes. Activities consisted of a talent show, playing board games, group sing-alongs, solving a crossword puzzle, and one to one interviews of the older people by the children. Refreshment such as fruit juice and snacks were served. At post-test after 6 months, 57% of older adults in the email pen-pal programme mentioned they enjoyed the programme and 88% of those took part in the face-to-face visiting programme. Regarding social network outcomes, 26% of those in the email pen-pal programme stated that they would like to continue to contact their pen-pals, while 74% were not interested.

Evidence Statement 2.3: Intergenerational activities and volunteering

There is weak but consistent evidence from 5 studies that intergenerational social activities that involve volunteering by older people can be effective; 1 quasi-experimental studies, 3 uncontrolled before and after studies and 1 qualitative study (Bernard 2011 -, Cook 2013 -, Mui 2013 -, Power 2007 -, Scott 2003 -).

Bernard 2011, - (UBA, Canada) examining the effects of an intergenerational telementoring program reported positive behaviour changes for older mentors in terms of their self-confidence, self-expression, enjoyment and self-efficacy. **Mui 2013 – (exploratory uncontrolled before and after study, US)** used a survey to explore the effect of a programme training older Chinese immigrants to provide emotional support and coping skills over the telephone – in Mandarin or Cantonese at least once per week to other older Chinese caregivers. All volunteers felt empowered and happier, while 67% felt better about themselves.

Cook 2013, - (UBA, UK) looked at the impact on loneliness and mental wellbeing of 30 older volunteers who were trained and supported to establish hen houses and then deliver hen-related activities to less able older people, friends/relatives, care staff/managers and school children. There was a significant increase in wellbeing at 9 month follow up ($p < 0.000$) but no significant change in loneliness.

There is also evidence from a quasi-experimental study used to look at how volunteering impacted on the levels of generativity in people over the age of 60 (**Scott 2003 -, quasi experimental study, USA**). 53 volunteers were compared with 29 non volunteering older people. Although volunteers had a relatively high mean level of generativity, the only significant differences ($p < .05$) were found to be between volunteers involved in various miscellaneous tasks (who had the highest levels of generativity), on the one hand, and those involved in the delivery of meals as well as the non-volunteer groups (who were the two lowest groups on generativity).

In the USA, in a very small qualitative study **Power 2007 et al (-), qualitative ethnographic study, USA** looked at the impact of volunteering to provide help to

adopted and fostered children and/or younger generations for 6 hours per week in return for a rent reduction. Interviews with the 2 participants indicated that intergenerational action brightened up their lives, raised their spirits, helped them to find purpose of life and increased their sense of self-worth.

The Cook 2013 study (-) was implemented in the UK. All of the other studies were conducted in settings outside of the UK making it difficult to assess their applicability to a UK context. It may be difficult to replicate the planned community to support adopted and fostered children in the Power study in a UK context.

Two studies included in the review examined the psychosocial effects of different intergenerational activities, some of which were delivered in school-based settings.

Table 2.3: Summary of Characteristics for Studies Included in Evidence Statement 3: Intergenerational activities

| Author Year Country | Quality rating | Study type | Sample size | Intervention content |
|---------------------------|----------------|--|---|---|
| Bernard 2011 Canada | - | Exploratory before and after study using mixed methods | 18 (older adults)(gender not stated; mean age 70). 18 (young people) | Intergenerational telementoring program |
| Cook 2013 UK | ‘- | Exploratory uncontrolled before and after study` | 30 older volunteers, 14 men and 16 women, mean age 74 | Volunteers trained to rear and look after chickens, visit older people and schools. |
| Mui 2013 US | - | Exploratory uncontrolled before and after study | 19 older volunteers, 72% women, mean age 72 | Pilot programme for older Chinese immigrants volunteering to provide emotional support and coping skills over the telephone to other older Chinese immigrants |
| Power 2007 US | - | Qualitative study | 1 man aged 70 and 1 woman aged 80 | Older people volunteering at least 6 hours per week to work with children in their community |

| | | | | |
|---------------------|---|---------------------------------|---|---|
| Scott 2003 US | - | Quasi- experimental study | 53 volunteers 49 non volunteer controls (age range 60 to upper 80s, mean age and gender split not reported | Intergenerational programme where healthy older people volunteer in a child care setting or on a meals on wheels programme or miscellaneous volunteering |
|---------------------|---|---------------------------------|---|---|

(**Bernard 2011, -, UBA, Canada**) examined the effects of an intergenerational telementoring programme on wellbeing outcomes in older adults (aged 59-82 years, n=18). The intervention was offered as a tele-based support tool for the practice of English or French as a second language, with the older adults residing in Ottawa as telementors (i.e. mentors via telephone) for young students (n=18) residing in Paris, France. The intervention consisted of 10 weekly, 1-hour, telementoring sessions. The senior volunteer telementors received free equipment and application installation in their residence for the duration of the program. Based on descriptive analyses of both quantitative and qualitative data (no significance levels reported), the study reported positive behaviour changes in the areas of: self-confidence, self-expression, enjoyment and self-efficacy among the older adults.

In the UK in a small uncontrolled before and after study **Cook 2013 (-)** looked at the impact on loneliness, mental wellbeing and physical health of 30 older volunteers, (mean age was 73.89 ± 13.95) of being trained and supported to establish hen houses in care settings and improve their skills and confidence in delivering activities with less able older people, friends/relatives, care staff/managers and school children. The project was implemented in the Gateshead area with funding from the Big Lottery Silver Dreams Fund. The idea of this programme was to reach men in particular, but the majority of volunteers in the study (16 of 30) actually were women. All volunteers lived independently or in sheltered accommodation. Analysis of changes in the Warwick Edinburgh Mental Wellbeing Scale from baseline to follow-up 9 months later for the volunteers indicated that there was a significant improvement in scores ($p < 0.000$) from a median 41.0 to a median of 53.0 suggesting that there were improvements in mental well-being in the study population. However, observed improvement in De Jong Gierveld Loneliness Scale scores from a median of 5.0 to 4.0 over the same period was not significant ($p < 0.281$).

In the US **Scott 2003 (-)** used a quasi-experimental study to compare groups of older people (60+) on their levels of generativity related to volunteering activities. The participants of the study were engaged in one of the following interventions: 1) Young at Heart (a programme

that places older volunteers in childcare settings, n=14); 2) distributing Meals on Wheels (n=14); or 3) Miscellaneous activities including church activities and working in libraries (n=25). A group of non-volunteering older people served as a control group (n=49). The four volunteer/non-volunteer groups differed in their levels of generativity, based both on a one-way analysis of variance (ANOVA) for unadjusted means ($F [3, 97] = 5.94, p = .001$) and an analysis of covariance (ANCOVA) for adjusted means ($F [3, 83] = 5.97, p = .001$). In neither analysis did the groups differ on life satisfaction (p values of .227 and .399). Although the Young at Heart volunteers had a relatively high mean level of generativity, the only significant differences ($p < .05$) were found to be between the miscellaneous volunteers (who had the highest levels of generativity), on the one hand, and the “Meals” and the non-volunteer groups (who were the two lowest groups on generativity), on the other.

In the US, **Mui 2013 (-)**, as part of an uncontrolled before and after study, used a survey to explore the effect of a pilot programme training older Chinese immigrants to provide emotional support and coping skills over the telephone –in Mandarin or Cantonese at least once per week to other older Chinese immigrants with caregiving responsibilities. The intervention consisted of intensive 72 hour-training with ongoing training sessions every 3-4 weeks. The 19 volunteers had a mean age of 72.1 (64-86) and had fair to low English proficiency. Results of a focus group and a short questionnaire with closed and open-ended questions, suggested that the volunteers felt that their own mental well-being had improved, with all indicating that they felt empowered and happier and 67% feeling better about themselves. Other qualitative findings included reporting “my spouse and I have become more active in social activities” (61%), “my relationship with my family has improved” (72%), and “I have enlarged my social circle of friends” (83%).

In the USA, in a small qualitative study **Power 2007 (-)** and colleagues looked at the positive links between volunteering activities and wellbeing in an intentionally planned intergenerational community called, which was as an intergenerational neighbourhood where families adopted and fostered children. Older adults in the community have to agree to volunteer to provide help children and/or younger generations for 6 hours per week for which they get a reduction in their rent. Children from the foster care system would call these older volunteers grandpa or grandma. Volunteering activities varied depending on older people’s individual capacities such as fixing bicycles, gardening, and talking with children. Qualitative analyses utilising an ethnographic framework focused on the experience of two older adults, one a man of 70 and a woman of 80 who both had lived for 7 to 8 years at Hope Meadows. In

interviews they said that being with children brightened up their lives, raised their spirits, helped them to find purpose of life and increased their sense of self-worth.

Evidence Statement 2.4: Intergenerational education interventions for health and social care professionals

There is weak evidence from one Canadian study (**Basran 2012, - UBA, Canada**) that an intergenerational educational intervention can help improve the attitudes of medical students towards healthy older people and tackle some of the stereotyping and myths around ageing in the short term. Attitudes scores significantly improved $p < 0.01$ following intervention, but this effect was only partially maintained one year later. There is also weak evidence from (**Hernandez 2008, quasi experimental study, Spain, -**) that the attitudes of university student towards older people change positively following an intergenerational learning programme.

Potentially these types of intervention could be implemented in the UK.

Table 2.4: Characteristics of Studies in Evidence Statement 2.4: Intergeneration mentoring for health and social care professionals

| Author Year Country | Quality rating | Study type | Sample size | Intervention content |
|------------------------------------|-----------------------|-------------------------------------|--|---|
| Basran 2012 Canada | - | Uncontrolled before and after study | 184 students and 54 older volunteers | Mentoring programme for health and social care students |
| Hernandez 2008 Spain | - | Quasi-experimental study | 179 university students; 100 older adults; no gender information, mean age 75. | University based intergenerational service-learning programme |

In Canada **Basran et al (-)** in an uncontrolled before and after study evaluated the long term impact on the attitudes of health and social care students following the implementation of what was called a Senior Mentoring Programme. This was an intergenerational educational intervention aimed at increasing student health care professionals knowledge of older people and the ageing process; improving attitudes toward, comfort with, and respect of older people; and enhancing the skills required to work with older adults, such as assessment, listening, and communication skills. The study deliberately focused on a mentoring programme involving healthy older people, with an aim of trying to change perceptions of older people and see them as more than frail medical patients. 184 medical students, divided into groups of three to four students from medicine, pharmacy, nutrition, nursing and social work were partnered with 54 healthy older adult volunteers – known as “senior partners” - recruited from a local independent housing retirement community. Students met with their assigned senior partner four times in the autumn term, including a meeting at the medical school orientation dinner and also at a wrap-up event and social dinner. Discussions using guidelines provided covered general life histories, living situation, significant life events, change in the world over their life span, knowledge of available community resources, as well as education, nutrition and physical activities. Unstructured informal conversations were also included. The medical students also kept reflective diaries and participated in two large-group interprofessional meetings designed to integrate learning and share their insights about their senior partners. At initial post-test survey student attitudes towards a hypothetical 80 year old man and 80 year old woman were found to have improved significantly with Polizzi’s Aging Semantic Differential Scores reducing (which indicates improvement) (Polizzi 2003). Post test scores for the 80 year old man were 66.54 (SD 19.27) compared with 78.71 pre-intervention ($p < 0.01$); for the woman scores were 56.61 (SD 18.87) and 69.47 (SD 15.06) $p < 0.01$ respectively. Effect sizes were large with partial $\eta^2 = .28$ and $.30$ for the 80 year old man and woman respectively. Paired samples t-tests comparing the pretest scores with the one-year follow-up scores found no significant difference in attitudes for an 80-year-old man, $t(32) = 1.45$, $p = 0.16$ but did find a significant difference for an 80-year-old woman, $t(33) = 2.67$, $p = 0.01$. One year follow up surveys also reported that 18 of 28 medical students in 2008, 40/68 in 2009 and 26/20 in 2010 agreed or strongly agreed that the programme had better helped them to communicate with older people. Focus group work

indicated that “*many students felt participating in the programme increased their awareness of myths and helped reduce the stereotypes they held about older adults*” (Page 316)

There is also weak evidence from **(Hernandez 2008, quasi experimental study, Spain, -)** that the attitudes of student towards on the wellbeing of older people change positively following an intergenerational learning programme. Slightly depressed older people (mean age 75) and university students studying for a degree in sport and exercise science at the University of Leon in Spain took part in the programme. The group of the young people that interacted with older people tended to reduce their stereotyped views and were more likely to agree with them following intervention. This was greater than in the control group, but no statistical significance was reported.

Cluster 3: Friendship programmes

Evidence Statement 3: Building friendships

There is consistent moderate evidence from six papers reporting results from five evaluations (Lawlor 2014 ++, Martina 2006 +, Martina 2012 + Stevens 2006 +, Pope 2013 -, Butler 2006 -) that friendship programmes can enhance various aspects of older peoples’ mental wellbeing and address issues of loneliness and isolation.

In Ireland **Lawlor et al. 2014** (++) used a RCT study to evaluate a brief peer volunteer visiting programme for community dwelling older adults. Loneliness was significantly lower in the intervention group at 3-month follow-up ($p=0.003$). One quasi experimental study in two papers **(Martina 2006 +, Martina 2012 +, quasi-experimental, Netherlands)** found significant increases in the number of friends for the intervention group (all women) participating in a Friendship Programme compared to the control group ($\chi^2=9.569$, $p<0.005$), as well as significant improvements in subjective wellbeing. Another study which combined intervention and control group data from two earlier case controlled studies, as well as in comparison to data from a national survey, **(Stevens et al., 2006 +, quasi experimental, Netherlands)** using regression analyses corroborated these findings.

Regression analysis also predicted that that improvement in friendship would be associated with a decrease in loneliness two years later $p < 0.001$.

Pope, 2013 -, UBA, US, - in a church based programme bringing together representatives of different parishes reported significant improvements in tangible social support at 1 year follow up [$F(1,88) = 11.22, p = 0.0012$]. Another exploratory mixed methods study (**Butler 2006**, -, US) looked at a social support programme run by volunteers who were older people themselves. While social network and loneliness scores were good the study design meant it was not possible determine if this was due to the intervention.

Although these studies were all conducted outside of the UK, the interventions, most notably those in Ireland and the Netherlands, potentially could be delivered in a UK context.

Table 3: Characteristics of Studies in Evidence Statement 3: Building friendships

| Author | Quality rating | Study type | Sample size | Intervention content |
|-------------------------------------|----------------|---------------------------------|--|---|
| Butler 2006 US | - | Exploratory mixed methods study | 66 (intervention); 82% women, mean age 78; | Senior Companion Programme (SCP), providing social support and assistance to frail community-dwelling older adults |
| Lawlor 2014 Ireland | ++ | RCT | 49 (intervention) 51 (control); 75% women, Median age 80 | Brief volunteer peer visiting programme for community dwelling older people |
| Martina 2006/2012 Netherlands | + | Quasi-experimental study | 69 (intervention) 60 (control) 100% women, mean age 63 | A friendship enrichment programme, focusing on empowering the older participants to develop and maintain friendships by training social abilities |

| | | | | |
|--------------------------------|---|---|--|--|
| Pope 2013 US | - | Uncontrolled before and after study | 142 (intervention); 82% women, Mean age 65 | A church-based spiritual health promotion programme bringing together representatives of different church congregations |
| Stevens 2006 Netherlands | + | Quasi- experimental study | Study 1: 72 (intervention) 100% women, mean age 64 Study 2: 69 (intervention) 55 (control), 100% women, mean age 64 Dutch Aging Survey Comparison Group: 226, mean age 65, 100% women | A friendship enrichment programme, focusing on empowering the older participants to develop and maintain friendships by training social abilities |

In Ireland **Lawlor et al. 2014** (++) used a RCT study to evaluate a brief peer volunteer visiting programme for community dwelling older adults (median age: 80 years in the intervention condition, n=49, and 81.5 years in the control condition, n=51) who experienced loneliness. The intervention contained four elements; the recruitment, training and retention of volunteers and subsequent home visits to intervention participants from these volunteers. Each intervention participant was matched with a volunteer, who visited them for an hour a week for ten weeks over a three month period. All volunteers recruited had to be at least 55 years old. Participants in the control group received their usual individualised care from community services. All participants received a home visit from a member of the research team to conduct data collection at three data collection time points. The study found that loneliness, measured using the De Jong Gierveld Loneliness Scale, was significantly lower in the intervention group at 3-month follow-up (p=0.003, adjusted for baseline values). This reflected differences between the groups on both the social loneliness subscale (p=0.022) and the emotional loneliness subscale (p=0.015). Social network scores on the Lubben Social Network Scale did not differ significantly between groups (p=0.065) with higher scores in the intervention group. However, among the intervention participants that were followed up at three months, 30 had sustained a new social connection since the commencement of the study and 25 of the participants continued to receive visits from a volunteer after the end of the study. There may also be benefits for older volunteers in the trial, with a reduction in loneliness measured using the De Jong Gierveld Loneliness Scale from 2.1 at baseline to 1.6 at 3 month follow up (p=0.046 Wilcoxon matched-pairs signed-ranks test). However there

was no control group for volunteers and while both emotional and social loneliness subscales improved, neither was statistically significant. There was also no change in their social network scale scores.

Two papers reported on a quasi-experimental study from the Netherlands (**Martina 2006 (+)**, **Martina 2012 (+)**) looking at the effects of a friendship enrichment programme targeting older women (age range 53-86). The programme consists of 12 lessons focused on different topics related to friendship, such as expectations in friendship, self-esteem, making new friends, setting goals and boundaries and solving conflicts in friendship. Six months after completing the programme 63% of 60 participants in the friendship programme reported having made new friends compared to 33% of the 55 participants in the control group ($\chi^2=9.569$, $p<0.005$).

There was a significant improvement in mean positive affect wellbeing scores measured using the Positive and Negative Affect Scale (PANAS) in the intervention group (30.83 [s.d. +/-4.19] to 31.34 [s.d. +/-3.82] versus the control group 34.60 [s.d. +/- 8.17] to 26.95 [s.d. +/- 2.60]). The between group difference at follow-up was significant $p=0.0000$ $F=78.18$). There was also significant reduction in mean negative affect wellbeing scores (e.g. low negative affect reveals a state of calmness and serenity) in the intervention group versus the control group (29.46 [s.d. +/-5.37] to 28.14 [s.d. +/-5.10] versus 25.98 [s.d. +/- 4.65] to 29.25 [s.d. +/- 3.44]). The between group difference at follow-up was significant $p=0.0000$ $F=11.77$. At the six month follow-up, compared to the control group, there was also a modest improvement in self-esteem in the intervention group (32.31 [s.d. +/-7.77] to 34.56 [s.d. +/-6.35] versus 37.53 [s.d. +/- 6.48] to 37.56 [s.d. +/- 6.54]) but this was not significant ($p=0.063$, $F=2.83$). There was also a modest improvement in life satisfaction in the intervention group compared to the control group (14.08 [s.d. +/-4.19] to 15.19 [s.d. +/-3.93] versus 17.24 [s.d. +/- 3.48] to 16.84 [s.d. +/- 3.99]). This between group difference was significant ($p=0.051$, $F=3.06$). Using a paired comparison between baseline and six month follow up in the intervention group there was a significant increase in life satisfaction ($t= -2.60$, $p=0.012$) and self-esteem ($t=-4.31$, $p=0.000$). There was also a significant decline in negative affect ($t= 2.274$, $p= 0.027$) and loneliness ($t=2.904$, $p=0.041$) from baseline to 6 months in the intervention group.

An earlier analysis by the same authors **Stevens 2006 +** used regression analysis to compare findings from two evaluations of the Friendship programme with outcomes reported for 226

women in the Dutch Ageing Survey. The difference between the participants in a binary logistic regression model between the friendship program and friendship development reported in the Dutch Ageing Survey for friendship development was significant, $\chi^2 = 15.447$, $p = .001$; participants in the program reported more positive developments in friendship. Regression analysis also predicted that that improvement in the development of friendship was associated with a decrease in loneliness two years later $p < 0.001$ (Beta Regression Coefficient -1.865).

In the USA, **Pope 2013** (-) evaluated the impacts of a church-based health promotion programme in the United Methodist Church that brought together representatives of different church congregations on their religiosity, spirituality and social support. In an uncontrolled before and after study, 65 representatives of African American congregations were paired with 77 representatives of white congregations (mean age= 65.33, SD 9.89) from eight counties in South Carolina. Over one year, biracial groups had two-hour meetings on a weekly basis, which were held by starting with a guided meditation, followed by deep breathing and stretching activities and then -the participants continued with mental exercises based on a curriculum to promote spiritual growth and social bonds.

Tangible social support scores, one element of the Medical Outcomes Study Social Support Survey, improved overall. Overall mean scores increased from 64.32, s.d. +/- 25.53 at baseline to 74.72, s.d. +/- 22.95 at 1 year follow up [$F(1,88) = 11.22$, $p = 0.0012$]. Mean tangible social support scores increased from 67.95 s.d. +/- 22.90 at baseline to 77.56 s.d. +/- 21.30 for African Americans at follow up and from 61.50 s.d. +/- 27.30 at baseline to 72.55 s.d. +/- 24.11 for White participants at follow up. There were no differences in other social support domains examined: affectionate support; emotional support; informational support and positive social interaction.

In a very limited analysis, the US **Butler 2006** (exploratory design applying both quantitative and qualitative data analyses -) looked at the Senior Companion Programme (SCP). This provided social support and assistance to frail community-dwelling older adults ($n=32$) by volunteers ($n=34$) who were also older people (age range: 62 to 99, mean age: 78). The reporting was limited to the social integration and loneliness scores for both the senior companions and the older people they befriended and there were no control group or reported repeated measures of the intervention outcomes. Scores were only collected at one time point and it is not possible to determine length of exposure to the intervention. While scores on the

social network and loneliness scales were good, suggesting promising psychosocial outcomes among the frail older adult intervention participants, because of the study design it was impossible to determine if the SCP contributed to these positive outcomes.

Cluster 4: Participation in further and continuing education beyond retirement age

Evidence Statement 4.1 Face to face participation in further and continuing education

There is weak evidence supporting educational programmes targeted at older adults in university settings from 5 studies: 3 quasi-experimental studies (**Arkoff 2004 -**, **Fernandez-Ballesteros 2012 +** and **Fernandez-Ballesteros 2013 +**) and 2 uncontrolled before and after studies (**Portero 2007 +** and **Orte 2007-**).

Arkoff et al 2004, quasi experimental, USA, - looked at the effectiveness of a life review programme at a university based Academy of Life Long Learning. After a 14 weeks period there were significant improvements in wellbeing ($P < 0.05$). There were no significant changes in the comparison group.

One quasi-experimental study (Fernandez Ballesteros et al, 2012, Spain +) for another university based programme was associated with improvements in positive ($p = 0.008$) and negative affect ($p = 0.039$) compared to a control group. Impacts on negative affect were replicated in when this programme was expanded to three other countries **Fernandez-Ballesteros et al 2013 +, quasi experimental study, Spain, Chile, Mexico and Cuba.**

Portero, 2007, UBA +, Spain, found statistically significant increases in the level of subjective psychological well-being for students on a 'Third Age' university programme ($p < 0.000$). Another study **Orte 2007 -, UBA, Spain)** found that participation in mainstream university classes by older people led to a significant increase in the number of new relationships ($p < 0.001$).

These studies were conducted outside of the UK, predominantly used by retired

people between the ages of 55 and 70 and had a formal academic nature. In principle the interventions identified in this review could be implemented in a UK context. Third age educational activities have a long tradition in the UK, including both academically oriented learning, as well as learning primarily for enjoyment.

Table 4.1: Summary Table for Evidence Statement 4.1: Third age educational activities

| Author Year Country | Quality rating | Study type | Sample size | Intervention content |
|---|-----------------------|---|--|--|
| Arkoff 2004 US | - | Quasi-experimental study with control group | Intervention: 18 women Comparison: 18 women Mean age 66 | Life review programme delivered at an Academy of Lifelong Learning |
| Fernandez-Ballesteros 2012 Spain | + | Quasi-experimental study with control group | 56 intervention group 39 control group; 50% women, mean age 61 | 3 year university programme for older adults |
| Fernandez-Ballesteros 2013 Spain, Mexico, Chile, Cuba | + | Quasi-experimental study with control group | 250 intervention group 65 in control group; 53% women, mean age 62 | 3 year university programme for older adults |
| Orte 2007 Spain | - | Uncontrolled before and after study | 186 (intervention) Typical age range 60 – 69 (gender/ mean ages not reported) | A community-based open university programme targeting older adults |
| Portero 2007 Spain | + | Uncontrolled before and after study | 163 (intervention); 63% women, mean age not stated – from 55 upwards | A Third Age University Programme |

Five studies included in the review looked at participation in education beyond retirement age to support the mental wellbeing and independence of older informal caregivers. In the USA

Arkoff et al 2004 (-/-) used a small scale quasi-experimental study to assess the effectiveness of a their own life review programme with the aim of helping independent older people enhance their psychological functioning to better deal with the threats, challenges and opportunities (e.g. loss of autonomy, lack of social contacts) experienced in old age. They noted that previous research focused on older people discussing their life stories and reviewing their life status had often been confined to people who were no longer independent and had serious health problems. The manualised intervention, “The Illuminated Life” was delivered using a leader manual by an older person acting as group leader to 18 older women aged between 56 and 80 (mean age 65.5) who were attending a university based Academy of Life Long Learning. There was a comparison group of 18 women who also were attending the academy who did not participate in the life review programme. The group leader had her own manual and the course was 2 hours per week for 14 weeks, plus preparation time for each session for all participants. One hour was allocated to whole group discussion with the group split into sub-groups of around 4 people to share and discuss answers to the life question under consideration. At the end of the 14 week period there were significant improvements in all six sub-scales of the 84-item Scales of Psychological Well-Being (Ryff 1989): Autonomy: Pretest Mean 64.9 SD 9.88, Posttest Mean 71.1 SD 8.4 ($P<0.001$) $t=4.18$. Environment mastery Mean 62.8 9 SD 14.04, Posttest Mean 71.6 SD 11.45 $t=4.45$ ($P<0.001$). Personal Growth Mean 73.8 SD 7.23, Posttest Mean 78.7 SD 4.9 $t=3.82$ ($P<0.01$). Positive Relations with others Mean 66.4 SD 12.10, Posttest Mean 71.3 SD 11.4 $t=2.73$ ($P<0.05$). Purpose in Life Mean 65.9 SD 11.64, Posttest Mean 72.5 SD 10.16 $t=3.58$ ($P<0.01$). Self Acceptance 63.1 SD 15.18, Posttest Mean 72.5 SD 11.93 $t=3.48$ ($P<0.01$). In contrast there were no significant changes in these scores in the comparison group.

In Spain, **Portero et al, 2007 (uncontrolled before and after +)** investigated the effect of older people participating in a Third Age University Programme on health and well-being of the older adults ($N=163$). Retired older people aged 55 and over, enrolled in the Third Age University Program Aula de la Experiencia at the University of Seville. There was a statistically significant increase in the level of subjective psychological well-being, measured by the Scale of Well-being- EBP (Sanchez-Casanovas 1998) from 3.6 s.d. +/- 0.4 at baseline to 3.9 s.d. +/- 0.4 at follow-up ($p<0.000$). Overall social support increased significantly from a mean of 31.1 s.d. +/-2.2 to mean 32.7 s.d. +/- 2.4($P=0.000$).

Another Spanish study, **Orte 2007 UBA, (-)** evaluated a community-based open university programme targeting older adults (age range 60 to 69). The programme was organised into 3 academic years during which two or three afternoons a week were spent attending classes within an Open University for Older People programme. Based on quantitative and qualitative observations, the older participants were reported to have gained social relationships throughout the programme, which was significantly related to not experiencing feelings of loneliness and the perception of often receiving emotional and informational social support. This was measured using non-standardised measurements (i.e. questions on social contacts and perceived social support of the participants)

Fernandez-Ballesteros et al 2012 (+) in a quasi-experimental study the impact of participation of older adults in a 3 year education programme at the Autonomous University of Madrid on active ageing, which involves cognitive, emotional, and social factors. Students on the University Programme for Older Adults (PUMA) from 2007 to 2011 (82 individuals) were eligible. 54% were women, with an age range of 55 to 70 (mean age = 61.06, SD = 4.19), with controls being a representative sample of the Madrid population over the age of 55. The course covered largely humanities and arts and consisted of 450 hours of teaching. Attendance at lectures was mandatory and they were taught by lecturers at the university. Its goals were to 1) to promote knowledge and competences (measured by tests and exams), (2) to promote personal development, and (3) to increase social participation. Of 67 students who had completed the programme 56 chose to participate in evaluation, mean age 60.89 (SD 4.33) and 50% women; while only 39 people in the 76 person control group completed the evaluation mean age 61.76 (SD 3.90) with 36% being women.

There were significant benefits to students in terms of increasing their positive affect and maintaining their negative affect on the Positive and Negative Affect Scale PANAS. Positive affect scores increased from 3.0 (SD 0.42) to 3.15 (SD 0.44) compared with a decline in the control group from 2.98 (SD 0.57) to 2.88 (SD 0.50) $F=7.267$ $p=0.008$. At post test negative affect scores on PANAS changed from 1.71 (SD 0.41) to 1.65 (SD 0.41) compared to 2.07 (SD 0.55) to 1.79 (SD 0.46) in the control group $F=4.448$ $p=0.039$. It can also be noted that general health levels were maintained in the intervention group but declined in the control group. Memory and learning performance improved in intervention groups but cognitive function declined in the control group. In the current study both the intervention and control groups increased their social, information seeking and productive activities significantly, but

the control group had a high attrition rate of 49% so their outcomes must be treated with caution. It is also unclear how much of a barrier the initial entrance exam is to participation on the course and what this might mean from an equity perspective.

The improvement in positive affect that the authors claimed was supported by the findings of another study. This study also explored the effects of university programmes for older adults in four countries: Spain, Cuba, Mexico, and Chile (**Fernández-Ballesteros et al., 2013 +**). Synthesising results from students in four universities in the four countries, negative affect was reduced ($t = 5.17, p < .01$), although there was no significant impact on positive affect. Self-perception of ageing improved ($t = 2.92, p < .01$), and the perceptions of group stereotype ($t = 3.85, p < .01$) were also more positive.

Evidence statement 4.2: Internet and multi-media delivered education programmes

There is weak but consistent evidence from 4 studies on positive benefits for mental wellbeing as a result of older people participating in educational activities through the internet and other electronic media (**Fernandez Ballesteros 2004 -, Fernandez Ballesteros 2005a - Fernandez Ballesteros 2005b -, Caprara 2013 -**).

Fernandez-Ballesteros et al 2004 -, quasi-experimental, Spain looked at the impact of a multi-media education programme on the wellbeing of older people. Life improved significantly $p = 0.005$. The study was later extended to compare the intervention with a traditional face to face version of the course delivered at a university (**Fernandez Ballesteros 2005a, quasi-experiental, Spain**). The face to face version tended towards an improvement in life satisfaction but this was not significant $p = 0.11$.

Caprara et al -, 2013 quasi-experimental study, Chile, Cuba, Mexico and Spain and **Fernandez-Ballesteros 2005b -, quasi-experimental, Spain** also described two evaluations of video multi-media programme and traditional educational programme delivered in university to older people. Significantly better life satisfaction in participants receiving the multi-media course in the **Caprara et al - 2013** study were seen but there was no impact in **Fernandez-Ballesteros 2005 -**.

These studies were conducted outside of the UK and involved formal structured academic education and were used by older people with a mean age of 70. Educational activities, including the use of distance learning techniques, open to people of all ages, including video and multimedia, have a long tradition in the UK. Therefore in principle these interventions could be implemented in a UK context.

Table 4.2: Characteristics of Studies in Evidence Statement 4.2: Telephone and internet delivered health education programmes

| Author | Quality rating | Study type | Sample size | Intervention content |
|---|-----------------------|--------------------------|---|---|
| Year | | | | |
| Country | | | | |
| Caprara 2013 Spain Chile Mexico Cuba | - | Quasi-experimental study | 155 multimedia intervention 240 on face to face course 88 in e-learning group; 76% women, mean age 70 | Multi-media third age education programme Vital Aging-M, alternative Face to Face based education programme and new e-learning programme. |
| Fernandez Ballesteros 2004 Spain | - | Quasi-experimental study | 57 intervention 31 control; 84% women, mean age 70 | Multi-media third age education programme Vital Aging-M |
| Fernandez Ballesteros 2005a Spain | - | Quasi-experimental study | 57 intervention 31 control 31 face to face programme; mean age 70 | Multi-media third age education programme Vital Aging-M and alternative Face to Face based education programme |
| Fernandez Ballesteros 2005b Spain | - | Quasi-experimental study | 25 multi-media group 28 face to face group 37 control group; 84% women, mean age 70 | Multi-media third age education programme Vital Aging-M and alternative Face to Face based education programme |

Fernandez-Ballesteros et al 2004 (-) in a quas-experimental study looked at the impact of the multi-media programme Vital Aging-M on the wellbeing of older people. The programme was trialled in several European countries: Germany, Italy and Spain. Vital Aging-M” is a 50 hour video course with 22 themes and additional supporting material on the internet. It’s objectives include providing basic knowledge on how to age actively and competently, promoting healthy lifestyles, provide training in strategies for compensating cognitive, memory and functional decline, providing training in strategies for optimising affective/emotional, motivational and social competencies, promoting personal development and social participation and promoting the use of new technologies. Lectures were recorded by academic professors mainly from Spain, but also from Germany and Italy. Lectures were translated when required. Groups met with a tutor each week with each session lasting 2–3 h with a break of 15 min, and covered one topic each. Those topics requiring 4 h were distributed across two sessions. The entire course took about 3 months to deliver. In the sessions, written material was distributed to all participants (video-lesson transcription, tests, and exercises for the lesson), they watched the video lesson, and, where required, they filled out the instruments proposed and distributed. In this evaluation 13 participants from residential facilities (mean age 79.3, Women 92.3%) were compared with 44 participants attending senior citizen clubs (mean age 69.9, women 83.7%) and a 31 people in a control group (, mean age 74.2, women 77.4%) that attended the same senior citizen club but did not participate. Many outcomes were examined at six month follow up. While there were no significant differences in changes in the frequency of social contacts or in satisfaction with these relationships between the three groups following the course, life satisfaction measured on a scale from 1(worst) to 4 (best) improved significantly in the community dwelling intervention group from 2.9 (SD 0.65) to 3.19 (SD 0.79) $p=0.005$. There were also additional benefits in terms of diet and physical health, but the authors acknowledged that this was a small scale study that needed longer term follow up. The study was later extended to compare the intervention with the traditional face to face version of the course “Vivir con Vitalidad”. Similar results were seen using this face to face programme at a university (**Fernandez Ballesteros 2005a -**) and it tended towards an improvement in life satisfaction but this was not significant with scores improving from 2.93 (SD 0.75) to 3.14 (SD 0.79) $p=0.11$.

Caprara et al 2013 - and Fernandez-Ballesteros et al 2005b (-) described two further evaluations of the video multi-media programme and the traditional educational programme delivered in university to older people. These again were small controlled before and after

studies set in Spain, Chile, Mexico and Cuba. Using the same outcome measures used in earlier evaluations, it was reported that both face to face and multi-media course participants reported higher frequency of cultural, intellectual and social activities while no changes were found among controls. Significantly better life satisfaction in participants receiving multi-media course was seen in the first study but there was no impact on outcomes in the second evaluation. It was also noted that in first evaluation participants had a significantly better view of ageing after either the face to face or multimedia courses but no effect was seen in the second study. The authors noted that small sample sizes and short term follow up make it difficult to see any effects. They also acknowledged that participants were volunteers who were willing to take part in an educational programme and may therefore not reflect wider community of older people.

Cluster 5: Self management activities

Evidence Statement 5: Group and self-help activities to promote self management ability

There is moderate evidence from 2 studies (Frieswijk 2006 ++, Kremers 2006 +) that group and self-help activities to promote self management ability (SMA) can have a positive impact on the mental wellbeing of older people in the short term but this is not sustained.

Frieswijk et al 2006 (++), randomised study with wait list control, Netherlands found that a self administered bibliotherapy course significantly improved the ability of slight to moderately frail community dwelling older people to self-manage ($P < 0.05$). Subjective wellbeing measured was significantly higher at the end of the 10 week course ($P < 0.05$) compared to controls ($P < 0.05$) but this significant difference in effect was not sustained at 6 month follow up.

Kremers et al 2006 (+), RCT, Netherlands found that self-management group intervention led to significantly improved self management ability at the end of the six week course. ($P < 0.05$). At six month follow up the difference between groups was no longer significant. In regression analysis it was shown that the intervention was associated with higher wellbeing scores at the end of six weeks but with no significant differences at six months.

These interventions could be delivered in a UK context.

Table 5: Summary Table for Evidence Statement 5: Group and individual activities to promote self management ability

| Author Year Country | Quality rating | Study type | Sample size | Intervention content |
|----------------------------------|----------------|-------------------------|--|--|
| Frieswijk 2006 Netherlands | ++ | RCT (wait list control) | 97: intervention 96: control, 42% women, mean age 72 | Bibliotherapy self management ability training course for older people |
| Kremers 2006 Netherlands | + | RCT | 63 intervention 79: control All women, mean age 63 | Volunteer and peer delivered self-management group intervention for healthy older people |

Frieswijk et al 2006 (++) in the Netherlands in a before and after study with wait list control found that a bibliotherapy (i.e. utilising the content of books or other written words in therapy) course delivered by correspondence over a period of 10 weeks significantly improved the ability of slight to moderately frail community dwelling older people (mean age 73.71 s.d. 6.24) to self-manage This was sustained over a subsequent 6 month period. Using ANOVA a main effect of time of measurement was found $F(2,314) = 3.16, p < 0.05$, with respondents reporting the highest level of the Self Management Ability Scale (SMA-S) at the pre-test ($M = 21.48$), and lower levels at the time of the first post test at the end of the 10 week course ($M = 21.36$) and the second post-test at six months ($M = 21.10$). Significant difference in SMA scores favoured the intervention group. The intervention group showed an increase in SMA-S at the time of the first post-test ($M = 21.73$ SD 1.96) as compared to the pretest ($M = 21.20$ SD 2.79), while the control group showed a decrease in SMA at the time of the first post-test ($M = 20.96$ SD 3.13) as compared to the pre-test ($M = 21.50$ SD 2.89). Better self-management ability has been associated with better subjective wellbeing; this study also reported that subjective wellbeing measured using the SPF-Index Level Scale (SPFIL) (Nieboer et al. 2005) was slightly higher at the end of the 10 week course compared

with the control group where subjective wellbeing decreased. However this difference in effect was not sustained at 6 months. Nonetheless authors considered it to be a low cost intervention that “*does provide an effective means of improving abilities to self-manage daily life, which may counteract a decrease in subjective well-being, moreover, it may be an important tool in the prevention of the loss of self-management abilities.*” (P. 226)

Kremers et al 2006 (+) in the Netherlands conducted a randomised controlled trial to assess the impact of newly designed self-management group intervention based on the Self-Management of Well-being (SMW) theory on self-management ability, well-being, and social and emotional loneliness in older women. The intervention was targeted at community dwelling women, 55 years of age and older who indicated by replying to a newspaper advert that they missed having people around them, wished to have more friends, participated in very few leisure activities, or had trouble in initiating activities. The intervention consisted of a manualised self management of wellbeing course - ‘Giving life more LUSTER’ which was delivered over six meetings, with 8 to 12 participants, each lasting 2½ hours. 142 women applied to do the course and 79 were randomised to a ‘do nothing’ control group and 63 to the intervention group. Only 46 (67%) of the intervention group completed the course and only 36 (57%) completed the follow up at 6 months (mean age study completers 62.8 intervention group, 65.2 control group). The intervention led to significantly improved self management ability successful in the short-term (T1 : at the end of the six week course). Using the Self-Management Ability Scale (SMAS-30) (Schuurmans et al. 2005) the intervention group increased from 44.7 (SD 9.6) to 48.6 (SD 8.1) vs controls 47.4 (SD 7.3) to 47.5 (SD 8.6), ANCOVA: $F(1, 108)=5.61, p<0.05$. At T1 there were significant effect of group found for the subscales ‘taking initiatives’ $F(1, 115)=5.93, p<0.05$, ‘positive frame of mind’ $F(1, 116)=15.77, p<0.001$, and ‘multifunctionality’ $F(1, 114)=4.82, p<0.05$, indicating that the intervention was effective for these self-management abilities. However, although the intervention group scored higher on all self-management abilities at T2 (six months) controls also had higher scores so the difference between groups not significant. $F(1, 88)=2.74, p=0.10$. There were no significant differences for any sub-scale at T2.

In regression analysis it was shown that the intervention was associated with higher wellbeing scores at T1. 4% of variance was associated with intervention (F change (1, 102) =7.90, $p<=0.01$). Self management ability scores at T1 explained 8% of variance (F change [1, 101]=17.60, $p<0.001$) but combining intervention effect and self management ability effect indicated that although there was an effect of the intervention on well-being, this effect

was not mediated by increased self-management ability at T1. Moreover, although well-being of women in the intervention group remained at a higher level at T2, the well-being of the controls also improved so there was no longer a significant effect of the intervention on wellbeing after six months. Loneliness was reduced in both the intervention and control group at T1; they did not differ significantly. Loneliness scores did not differ significantly after 6 months. In a later 2007 study (Kremers et al. 2007) the authors compared their study sample with a random sample of potential target community based women, concluding that their sample was not fully representative of the population. While the women who applied for the course were, as intended, relatively low on overall well-being, high on negative affect, and very lonely, they did not have lower self-management abilities than women living in the community. They noted that *“a more specific recruitment procedure—focussing more on low self-management abilities—may be needed to better reach the women who are intended as the target group for the LUSTRE course. A more focused recruitment procedure may even increase the effectiveness of the course. An improved course would support ever more women in giving their life more LUSTRE”*. (P. 59)

Cluster 6: Use of computers and other information and communication technologies

Evidence Statement 6.1: Training courses on computing and use of the Internet

There is inconsistent evidence on the effectiveness of training courses in improving mental wellbeing and independence in older people from 13 papers covering 10 studies: 5 RCTs (Slegers 2007/2008/2012 ++), (White 2002 +), (Lagana 2013+), (Woodward 2011/13 -), (Cotton 2013 -), 2 quasi-experimental studies (Shapira 2007 +), (Fitzpatrick 2003-) and three before and after studies (Blazun 2012 -), (Campbell 2004 -), (Campbell 2005 -). In one well conducted RCT study (**Slegers 2007/2008/2012, RCT, ++, Netherlands**) no significant impact on wellbeing or loneliness was found suggesting that training courses may not have an impact. Another study (**Lagana 2013, RCT +, US**) also showed no significant difference in wellbeing in terms of self-esteem and perceived control.

There is moderate evidence from 3 studies (**Shapira 2007, quasi-experimental +, Israel; Blazun 2012, UBA -, Slovenia** and **White 2002, RCT+, US**) that computer training reduces

levels of loneliness. There is also evidence from preliminary findings of an ongoing RCT (Cotten 2013, RCT, USA, -) that internet use is associated with lower levels of loneliness.

There is weak evidence from one RCT conducted in the US (Woodward 2011-, US) (n=83) showing no significant changes in social networks, perceived social support and loneliness, and quality of life. An exploratory follow up study also did not find any significant changes in social networks, social support and loneliness (Woodward 2013 – US).

(Fitzpatrick 2003 -, quasi-experimental US) did not provide sufficient information to judge effectiveness. (Campbell 2004 - and Campbell 2005, -, UBAs, US reported reductions in computer related anxiety and an increase in internal locus of control respectively, but they did not provide sufficient information on wellbeing.

All studies are potentially applicable to the UK context. The evaluated interventions mainly targeted community-dwelling older adults and were applying standard technological equipment.

Training courses on computing and the use of the Internet

Thirteen papers covering 9 studies were identified that explored the effectiveness of different types of training and exposure to computers and the Internet (delivered both at older peoples’ day centres and clubs or virtually online, enabling the participants could take part from home).

Table 6.1: Characteristics of Studies in Evidence Statement 6.1: Training courses on computing and the use of the Internet

| Author | Quality rating | Study type | Sample size | Intervention content |
|--|-----------------------|---|--|--|
| Blazun 2012 Finland, Slovenia | - | Uncontrolled before and after study | n= 31 (Slovenia) n= 27 (Finland), 52% women, mean age 66 | Internet training courses with plenary sessions and possibilities for discussion |
| Campbell 2004 | - | Uncontrolled before and after study | n= 79, 83% women, mean age 72 | Training sessions in using the internet |

| | | | | |
|--------------------------------------|----|---|--|--|
| US | | | | |
| Campbell 2005 US | - | Uncontrolled before and after study | n= 42, 80% women, mean age 72 | Training sessions in using the internet |
| Cotten 2013 US | - | Ongoing RCT | N=205; split between controls and active group not reported, 82% women, mean age 83 | Training and access to the Internet |
| Fitzpatrick 2003 US | - | Quasi- experimental design | n= 12 (participant group) n= 12 (non-participant group) All women, mean age 76 | Computer training |
| Lagana 2013 US | + | RCT | n= 60, 70% women, mean age 69. | Computer and Internet training: one to one manualized training |
| Shapira 2007 Israel | + | Quasi- experimental design | n=22 (intervention) n=26 (control) 59% women, mean age 80 | Course in computer operation and Internet searching |
| Slegers 2007/08/12 Netherlands | ++ | RCT | n= 123 and 113 in intervention and control conditions respectively, mean age 70 (gender not reported) | Computer use training course over a 2-week period |
| White 2002 US | + | RCT | n= 51 (intervention) n= 49 (control), 72% women, mean age 71 | Computer training including basic computer skills, use of e-mail, and the internet |
| Woodward 2011/13 US | - | 2011: RCT 2013: Quasi- experimental | 2011 n=45 (intervention) n=38 control 72% women, mean age 71 2013: 19 intervention delivered by 6 peer tutors – compared with 45 in 2011 intervention group; 53% women, mean age 73 | ICT training with professional and peer tutors |

Slegers 2007, 2008, 2012 (++) conducted an RCT in the Netherlands involving older adults (aged 64-75, n=123 and 113 in two intervention and two control groups respectively). This study examined changes in activity level, physical, emotional and social wellbeing, as well as on the locus of control, mood and sense of mastery. The intervention consisted of a series of computer use training sessions led by instructors over a two-week period. No significant impact of the intervention was found on most measures of wellbeing and mood, although there were some impacts on levels of social interaction and sense of mastery. Those who received computer training but no subsequent computer intervention reported a reduction over time in the frequency of contacting people ($\chi^2 (2, n =44) =7.93, p =.02$). Participants in the no training, no intervention group were less active at the follow-ups (4 and 12 months) compared to baseline ($\chi^2 (2, n =50) =17.27, p <.01$). Significant interaction effects were found between the extent of computer use and time for the sense of mastery outcome (($F(2, 48) = 3.31, p = .04$), showing that between baseline and the 12-month follow-up, frequent computer users (around 8 hours per week reported as an average for the study sample) showed an increase in sense of mastery - whereas non-frequent users showed a significant decrease ($p =.01$). Additionally some significant changes over time were evidenced in the frequency of meeting people – the light computer users showed an increase between baseline and the 4-month follow-up but this decreased after the 4-month follow-up ($\chi^2 (2, n =24) = 8.23, p =.01$). Heavy computer users in the training-intervention group showed an increase in participation in hobbies over all time intervals, ($Q (2, n = 24) = 6.33, p=0.04$).

Shapira 2007 (+) in a quasi-experimental study examined the effects of a computer use and Internet training course delivered by trained veteran teachers and volunteers in a day care centre context in Israel to older adults (mean age 80). The intervention (n=22) lasted for 15 weeks (including 1-2 sessions per week and in the evaluation statistically significant differences were found between the intervention and the comparison groups (i.e. other provided activities delivered within the day care centre setting, such as courses in painting, sewing and ceramics, n=26) in all self-reported mental health and wellbeing measures post-intervention: higher levels of life satisfaction ($F = 39.94; df = 1:33; p<0.001; \eta^2=0.55$), sense of control ($F = 13.22; df = 1:33; p<0.001; \eta^2=0.29$) and life quality ($F = 7.42; df = 1:33; p<0.01; \eta^2=0.18$) and significantly lower levels of depression ($F = 10.00; df = 1:33; p<0.01; \eta^2=0.23$) and feeling of loneliness ($F = 34.71; df = 1:33; p<0.001; \eta^2=0.51$). For physical difficulties the comparison was found to be not statistically significant ($F = 2.24; df = 1:33; \eta^2=0.06$), although showing a decrease in the intervention group compared to the control.

Blazun 2012 (-) in an uncontrolled before and after study in Slovenia and Finland examined the effects of Internet training courses (once a week over a 3-week time period) delivered both in senior centre and nursing home settings. This intervention offered community-based computer and ICT management courses in Slovenia (n=31, nursing home residents only) and in Finland (n=27, community-dwelling older adults), led by trained facilitators in both contexts. The results reported a statistically significant reduction of loneliness between the baseline and post-intervention follow-up measurements in both countries (Mann-Whitney U = 894.000; $p = 0.001$). Older people who lived in towns and participated in computer training courses reported a statistically significant reduction in their feeling of loneliness ($p = 0.003$), in contrast to people living in rural areas, who did not report any differences ($p = 0.317$) following training. Based on the study results it was concluded that older people having limited options for socialising (e.g. living alone in towns or in a nursing home context) may increase their possibilities of social participation and independence, as well as decrease level of loneliness through learning ICT skills.

Lagana 2013 (+) in a randomised controlled trial looked at 60 community dwelling people aged 51 to 92. The intervention was a one to one delivered and manualised computer and internet training for 2 hours per session per week for 6 weeks. The comparator group were placed on a waiting list. The study found no significant difference in wellbeing measured using the Rosenberg self-esteem scale compared with the waitlist/control group. The intervention group reported significantly greater computer self-efficacy than the waitlist/control group when undertaking analysis of covariance ($p=0.001$). The intervention group at follow-up also had significantly lower levels of depressive symptoms compared to the control group ($p=0.004$).

In the US (**Cotten 2013, RCT, USA -**) examined how Internet use affects perceived social isolation and loneliness of older adults in assisted and independent living communities, based on data from an ongoing RCT study (n=205). Participants with a mean age of 83 years residing in assisted and independent living communities in Alabama, US participated in either an ICT-based intervention (training in using computers and the Internet to communicate with family and friends and to find information) or in attention or no-intervention control groups (group-specific number of participants not reported). The intervention period was 8 weeks. The preliminary findings, based on the baseline data

collection, indicate that Internet use is associated with lower levels of loneliness among residents of assisted and independent living communities. Regression analyses showed a relationship between the frequency of going online and the measured socio-emotional outcomes and between frequency of going online and selected Internet-usefulness outcomes; for example, increased frequency of going online was associated with decrease in loneliness scores ($P=.001$). Frequent internet use was associated with a decrease in respondents' perceived social isolation ($P=.06$). Among the measures of perception of the social effects of the Internet, all outcomes showed a statistically significant relationship with frequency of going online. Each 1-point increase in the frequency of going online was associated with a 0.508-point increase in agreement that using the Internet had made it easier to reach people ($P<.001$); a 0.516-point increase in agreement that using the Internet had contributed to the respondents' ability to stay in touch ($P<.001$); a 0.297-point increase in agreement that using the Internet had made it easier to meet new people ($P=.01$); a 0.306-point increase in agreement that using the Internet had increased the quantity of respondents' communication with others ($P=.01$); a 0.491-point increase in agreement that using the Internet had made the respondent feel less isolated ($P<.001$); a 0.392-point increase in agreement that using the Internet helped the respondent feel more connected to friends and family ($P=.001$); and a 0.289-point increase in agreement that using the Internet had increased the quality of respondents' communication with others ($P=.01$). The results, however, suggest that the frequency of going online impacts loneliness, but not perceptions of social isolation, with higher frequency associated with lower levels of loneliness but not with lower levels of perceived social isolation. It may be that perceptions of social isolation are related more to face-to-face contact than online contact with network ties; thus, frequency of going online is not related to perceived isolation.

White et al. 2002 (+) in the US ran a randomised controlled trial of the psychosocial impact of providing internet training and internet access to older people. A sample of 100 older people from four congregate housing sites and two nursing facilities were randomly allocated to either intervention ($n=51$) or control ($n=49$) group. Intervention included 9 hours of group training (three 2 hour sessions and three 1 hour sessions) over a two-week period. The training consisted of basic computer skills, use of e-mail, and an introduction to accessing the internet. The outcome measures included UCLA Loneliness scale which overall found that the positive reduction in loneliness in the intervention group (-2, interquartile range (-8,3))

was not significantly different to that of the control group (-1 interquartile range (-5,2) where no the change in scores between the intervention group and the control group was not significant ($p=0.52$). While there were decreased levels of loneliness in those individuals who continued to use the internet after training ($n=29$) -3 (- 8 to -1 interquartile range) compared to 19 individuals who did not continue to use the internet where a small increase in loneliness score were seen 1 (-6 to 3 (-1 interquartile range) this difference was not significant ($p=0.14$); There also was better outcomes for the perceived control scale but again this was not significant ($p=0.08$). Thus overall there were no statistically significant changes from baseline to the end of trial between groups.

In the USA **Fitzpatrick 2003** (-) examined the relationship between participation in a computer training programme and well-being among Catholic nuns who were retired from active teaching and education and were living in a retirement community in the USA run by the Sisters of Mercy order. The intervention included training on the elementary aspects of using computers (word processing, email, accessing and searching the Internet). Using a quasi-experimental design a sample of twenty four sisters (average age 76.3 years) were allocated to either participant group ($n=12$) or non-participant group ($n=12$). As a measure of mental wellbeing, the Psychological General Well-Being (PGWB) Schedule (Dupuy 1984) was used to measure self-representations of interpersonal affective or emotional states reflecting a sense of subjective well-being or distress. The results from the PGWB survey indicated that mean scores from the total PGWB Schedule and the 6 subscales were higher for the non-participating group ($M=82$; range 53-100); than for the participating group ($M=79$; range 58-88), but no statistical significance information was reported.

Campbell 2004 used an exploratory uncontrolled before and after design to examine the effects of a series of Internet usage training sessions. The study targeted community-dwelling older adults aged 60-83 ($n=79$) in the US and was delivered in library and senior centre contexts during a five-week period. Weekly training sessions consisted of small group-based training seminars in internet usage, led by supervisors trained for the assignments. No significant results were evidenced on the outcomes measured (locus of control, levels of anxiety or levels of computer use self-efficacy). Campbell 2005 (-) reported significant positive differences in local of control chance scores for both men ($p=0.02$), and women ($p=0.05$) suggesting that participants' perceptions of the role chance plays in their health declined between baseline and five week follow up.

Another excluded study by **Campbell 2008** used a quasi-experimental design to present develop a program to integrate computer technology into two Nurse Wellness Centres located in low-income minority high-rise facilities in Pittsburgh. A group of 110 older people (average age 73 and 68 years respectively) using the two centres were given computer training over a five-week period (once a week). They were assessed on their health locus of control, on their views about health and the value they place on health. However, the results from the mental wellbeing scales and surveys were not reported in the paper.

Woodward 2011 - in a US a RCT looked at the effects of an ICT use training program among community-dwelling older adults (mean age 72 years). The intervention program was delivered by a professional computer tutors to 45 people – 11 sessions over 22 weeks. 38 people were in the no intervention control group. The study presents mixed regression models for both computer-related, social support and mental health-related outcomes in the evaluation of the ICT use training programmes. No significant impacts on social support, mental wellbeing or loneliness were reported. In a small follow up quasi experimental study **Woodward 2013** -, 19 older people in the control group of the 2011 study received computer training from 6 older people who had been trained in the earlier study. The training sessions were every week for a 20-week period. The study also presented mixed regression models for both computer-related and mental health-related outcomes in the evaluation of the ICT use training programmes. Again there were no significant differences when compared to the 2011 study. While the study evidenced significant and consistent changes over time for both computer use self-efficacy (CSE) and developed ICT use (with CSE increasing over time throughout the training period and also with comparison to the control group), no significant changes could be found for any of the mental health outcomes measured (i.e. social networks and perceived social support and loneliness, as well as quality of life and depression).

Evidence statement 6.2: Telephone and internet communication

There is consistent weak evidence from seven papers covering six studies on the potential positive impacts of the use of different forms of telephone and internet communication on independence and mental wellbeing (**Cornejo 2013 a,b** -, **Bernard 2011** -, **Mountain 2014** ++, **Newall 2013** -, **Larsson 2013** -, **Jimison 2013** -).

(**Mountain 2014** ++, **RCT, UK**) in a well designed pilot study evaluated the effects of

telephone-based befriending on health-related quality of life and subjective wellbeing among older people. The evaluation showed results that favoured the intervention but differences between the groups were non-significant and the study ended prematurely due to difficulties in recruiting befrienders. (**Newall 2013 -, UBA, Canada**) looking at access to support via internet or telephone communication found no statistically significant mental wellbeing but concluded it could be promising in providing the older adults at risk for social isolation with meaningful social contacts.

Larsson 2013 -, UBA, Sweden in a very small study explored the effects of a small programme to promote social activities based on the internet. The number of social contacts increased and most participants reported improved independence when they used social internet based activities.

Jimison et al 2013 - UBA, US in a very small scale uncontrolled feasibility study looked at the use of Skype and webcam plus laptops as part of an interactive but largely automated health coaching initiative to encourage socialisation and communication in community dwelling older people. This indicated that the participants did regularly use Skype with new friendships developing.

(**Bernard 2011, -, exploratory mixed methods, Canada**) examined the effects of an intergenerational telementoring programme. Positive behaviour changes in the areas of: self-confidence, self-expression, enjoyment and self-efficacy were reported.

Cornejo 2013a,b -, uncontrolled before and after study, Mexico) in a very small scale study involving two older people and their immediate and extended families evaluated the impact of a situated display interface (a computer screen within a picture frame. Qualitative data indicate the older adults became engaged with the social network activities of their relatives and had new offline conversations and meetings.

It would be feasible to implement all of these studies in a UK context.

Table 6.2: Characteristics of Studies in Evidence Statement 6.2: Telephone and internet communication

| Author Year Country | Quality rating | Study type | Sample size | Intervention content |
|------------------------------------|-----------------------|--|--|--|
| Bernard 2011 Canada | - | Exploratory before and after study using quantitative and qualitative methods | n=18 (older adults) n= 18 (young people) | Intergenerational telementoring program |
| Cornejo 2013a,b Mexico | - | Uncontrolled before-and after study | 2 active and independent women (age 80+) families and their immediate and scattered families | A situated display interface providing information on postings by family members on a social network (Facebook) |
| Jimison 2013 US | - | Pilot uncontrolled before and after study | 9 older adults and their immediate families | Computer delivered health coaching platform |
| Larsson 2013 Sweden | - | Uncontrolled before and after study with quantitative and qualitative components | n= 5 | Client-centred occupational therapy intervention processes for meaningful Social Internet-Based Activities (SIBAs) |
| Mountain 2014 UK | ++ | RCT | n=78 (intervention) n=79 (control) | Telephone befriending intervention, led by volunteers |
| Newall 2013 Canada | - | Uncontrolled before and after study | n= 26 | The Seniors Centre Without Walls (SCWOW) program offering social and educational sessions |

Seven papers covering six studies in the review looked specifically at telephone and internet communication. One uncontrolled before and after study from Mexico (**Cornejo et al 2013a,b** -) evaluated the impact of a situated display interface providing information on postings by family members on a social network (Facebook) on the subsequent participation

of the older person in online and offline interactions with family members. The situated display interface took the form of a picture frame which surrounded a visual display screen which provided pictures and messages from family members, as well as news and weather items of interest to the older person. This study just looked at the cases of 2 active and independent women over the age of 80 and their immediate and scattered families. No quantitative information was recorded other than the number of photos uploaded by family members was reported. Qualitative responses from interviews with the older adults and their families reported that the older adults had become engaged with the social network activities of their relatives. The interviews also reported new offline conversations between the older adults and family members, as well as new offline meetings and additional Skype communications with more distant relatives.

One small Canadian study (**Bernard 2011 -**) looked at the effects of an intergenerational telementoring program (applied in personal computers equipped with web-cams) on wellbeing outcomes in older adults (aged 59-82 years, n=18). The intervention was offered as a tele-based support tool for the practice of English or French as a second language, with the older adults residing in Ottawa as telementors for young students (n=18) residing in Paris, France. Based on descriptive analyses of both quantitative and qualitative data (no significance levels reported), it reported positive behaviour changes in the areas of: self-confidence, self-expression, enjoyment and self-efficacy among the older adults. Also, increased interaction with the younger generation was reported. In contrast to the younger participants, the seniors were new to the use of such information technologies. However, at the end (after ten weekly 1-hour sessions) of the evaluated telementoring program, 77 % of them felt more confident using computer technologies, while 100 % considered the medium of videoconferencing to be very useful to their exchanges.

One study originated from UK, **Mountain 2014 (RCT, ++)** targeting community-dwelling older adults (mean age 82 & 80 in the intervention and control group respectively), examined changes in health-related quality of life and subjective well-being. The intervention (n=78) was led by trained volunteers and consisted of telephone-based befriending. Initial one-to-one befriending involved 10- to 20-minute calls once per week for up to 6 weeks made by the volunteer befriender to an allocated participant. This aimed to familiarize the participant with the volunteer, conduct everyday conversation and prepare participants for the telephone friendship groups. Further, the friendship groups consisted of up to 6 participants and involved 1 hour teleconferences, at a pre-arranged time, once per week for 12 weeks. The

friendship groups did not aim to induce behaviour change, but to reduce social isolation by providing a safe environment for building relationships, sharing experiences, companionship and support. The control group (n=79) received usual health and social care during the intervention period.

Comparing the outcomes of the intervention and control groups, the mean SF-36 MH score at 6 months post-randomisation was 77.5 (SD 18.4) in the intervention group and 70.7 (SD 21.2) in the control group, a mean difference of 6.5 (95% CI, -3.0 to 16.0) or 9.5 (4.5 to 14.5), adjusting for age, sex and baseline scores. These results indicate a non-significant positive effect of the intervention for the mental health aspects of experienced health-related quality of life among participants. Also for the other dimensions of the measured health-related quality of life, the differences in quality of life favoured the intervention group, but were non-significant. There were no differences in mean scores between the intervention and control groups, observed for the other measures used, except for the subjective wellbeing total score, indicating a significant difference favouring the intervention group (mean difference 0.8 (95 % CI 0.2 to 1.4). A significant limitation of the analysis was the fact that there were difficulties in recruiting sufficient numbers of volunteer befrienders to implement the intervention leading to the main planned study being halted. The authors noted a number of challenges which may have contributed to the lack of statistical effect: lack of statistical power, the small number of intervention arm participants who received the intervention per protocol, challenges in recruitment and non blinding of participants in the control arm.

One Canadian study (**Newall 2013** -) with an uncontrolled before and after design evaluated an intervention offering telephone support services to socially isolated older adults (n=26). The intervention targeted older adults aged 57-85 and provided a range of social and educational sessions via telephone. This included scheduled sessions led by invited guests, health professionals or volunteers, who via telephone presented and led discussions on relevant topics for the older adults. The study reported descriptive analyses of qualitative and quantitative data. indicating that this type of intervention could be promising in providing the older adults at risk for social isolation with meaningful social contacts. However, no statistically significant outcomes were reported on the mental wellbeing measures in this study.

In Sweden, **Larsson 2013** explored the effects of a small uncontrolled before and after study with quantitative and qualitative components to promote social activities based on the internet

in five older people aged 65-85 living in the community. The intervention was a client-centred occupational therapy to improve their Social Internet-Based Activities (SIBAs). Individual assignments were decided every week reflecting participants' progress. The assignment consisted of replying to a message using Facebook, call a friend using Skype, visit a forum on a regular basis, or draw a map for their social networks. The individual meetings were usually held in older people's homes or via an online video call lasting one to two hours on a weekly basis. The number of social contacts on the internet were increased after the SIBAs in three of five participants while one had no change and one reported reduced number of contacts over one month (Ann 1-2 vs. 5-6, Sven 1-2 vs. 1-2, Marie 1-2 vs. 5-6, Bengt 11-12 vs. 7-8, Greta 3-4 vs. 7-8). There were no significant differences in self-reported loneliness and the number of social contacts. However, in qualitative responses, most participants reported improved independence when they used SIBAs.

In the US **Jimison et al 2013 (-)** in a very small scale uncontrolled before and after feasibility study have looked at the use of Skype and webcam plus laptops as part of an interactive but largely automated health coaching initiative to encourage socialisation and communication in 9 community dwelling older people. Automatic feedback and inputs were provided to study participants depending on how sensors in their home monitored changes in their behaviours. The feasibility study indicated that the participants did regularly use Skype – on average contacting 5 other people over 9 weeks including other study participants with new friendships developing. The intervention will now be rolled out and evaluated further using the Lubben Social Network Scale-Revised (LSNS-R), a brief instrument measuring social contacts in the categories of family and friends (including neighbours) and the UCLA-R Loneliness Scale 10 to assess loneliness at baseline and after the intervention.

Evidence Statement 6.3: ICT interventions for carers

There is inconsistent evidence from three uncontrolled before and after studies (Torp 2008 +, Torp 2013 -, Dow 2008 -) on the effectiveness of information and communication technologies in improving the mental wellbeing and independence of older informal carers. There is evidence from one study (**Torp 2008 +, UBA, Norway**) that computer classes for carers were effective in improving the social contacts and sense of support for spousal carers who had caring responsibilities with their family and friends. Another, largely qualitative study, **Torp 2013 (-), UBA, Norway**) reported that most older carers made use of ICT-based

interventions to establish and sustain contact with informal peer support networks.

Addressing the issue of social isolation in older carers living in rural areas, **Dow 2008 (-), UBA Australia)** used a computer training intervention to develop basic computer skills, using email and the internet to improve the carers' mental wellbeing. Although results indicated a reduction in depressive symptoms and loneliness, no statistical evidence for the effectiveness of this intervention was provided.

All three of these studies are potentially applicable to the UK context. The interventions used were targeted at older informal carers in the community setting and in one study specifically focusing on the population of rural carers.

Table 6.3: Characteristics of Studies in Evidence Statement 6.3: ICT interventions for carers

| Author | Quality rating | Study type | Sample size | Intervention content |
|---------------------------------|-----------------------|-------------------------------------|--|--|
| Torp et al. 2008 Norway | + | Uncontrolled before and after study | n= 19, 42% women, mean age 73 | Computer classes for carers |
| Torp et al. 2013 Norway | - | Uncontrolled before and after study | n= 79, mean age 75 (gender balance not reported) | Safety Net service for informal carers |
| Dow et al. 2008 Australia | - | Uncontrolled before and after study | n= 14, 86% women, mean age 66 | Computer intervention for rural carers |

Three studies in the review looked specifically at ICT interventions for carers.

Three studies in the review looked specifically at ICT interventions for carers. A pilot uncontrolled before and after study by **Torp et al 2008 (+)** examined the extent to which ICT-based intervention, which consisted of computer classes focusing on accessing the information on a range of health topics and taking part in an online discussion forum for carers, could contribute to health promotion of older carers in Norway. Using a quasi-experimental design, 19 elderly spousal carers (average age 73 years) were assessed on their knowledge about the disease and caring, social contact, social support, carers stress and mental health problems. At follow-up one year later, there was no significant reduction in carer stress or mental health problems. A positive and significant change was found in scores related to their *contact with family and friends* (changes in mean scores 1.5 (0.06-2.88); $p=0.036$), and a sense of *social support* from other individuals (3.4 (1.14 – 5.61); $p=0.010$). The most increase from the baseline to follow-up was found for the contact with their grandchildren (mean change = 0.35, CI = -0.01–0.71, $p = 0.058$).

Another Norwegian before and after study by **Torp et al 2013 (-)** investigated whether the Safety Net intervention – service design to increase informal carer’s knowledge and to establish supportive social networks for informal carers - could help participants to increase their knowledge about caring and coping by using ICT and whether they could use the Safety Net intervention to establish informal support networks. Two ICT sub-networks were formed with 40 informal carers for dementia and stroke, and 39 informal carers in the network for disabled children and adolescents. Seventeen participants (out of $n=79$) who took part in Safety Net for at least one year were invited to take part in the focus group. To collect a quantitative data on the users satisfaction with Safety Net participants also completed a short questionnaire. The questions asked about their use of Safety Net, frequency and what components they used, and their overall level of satisfaction with the intervention. The data was analysed by testing the differences in scores between the experienced ($n=6$) and novice ($n=9$) Safety Net participants. The results showed that experienced participants used five different components extensively (mean score=5.3(SD=1.1)). The average score on the five different components of Safety Net for novice group was 2.9 (SD=0.8). All the experienced older participants rated the maximum satisfaction with Safety Net (7 out of 7-point scale) while the novice participants scored $M=3.8$ (SD=1.3). The differences between the two groups were significant for satisfaction with Safety Net ($p<0.001$), overall use of Safety Net ($p<0.001$), and use of web camera and discussion forum ($p<0.001$) respectively.

In this particular study the Safety Net intervention was found to be frequently used by experienced Safety Net participants who joined the network in 2004. This intervention enabled carers to share their experiences of caring with other carers via Safety Net.

An Australian study by **Dow et al. 2008 (-)** explored the feasibility of using a computer intervention for improving a social interaction and promoting the mental health of rural carers. An intervention consisted of a computer training (basic computer skills, using email and the internet) lasting a three-hour session per week over a four-week period with a three-month follow-up. A combined before and after intervention measures were used to assess carers mental wellbeing including loneliness, depressive symptoms, and carer burden. Fourteen carers (12 women and 2 men) with an average age of 65.5 took part in the study. For most participants the intervention resulted in a decrease of their depressive symptoms (for 9 out of 14 participants), and loneliness scores (for 11 out of 14 participants). There was a small change in the carer burden scores. Due to a small sample size no further statistical analysis was carried out.

Evidence Statement 6.4: Computer gaming

There is weak evidence from two US studies (**Studenski 2010, -, Kahlbaugh 2011, -**) supporting positive mental health outcomes for older people who make use of computer gaming devices. There is weak evidence from one unblinded and controlled study (**Studenski 2010, UBA, USA -**) that participation in interactive computer video dance games led to a significant improvement in positive self-reported mental wellbeing. There is weak evidence from an uncontrolled before and after study (**Kahlbaugh 2011, UBA, USA -**) that playing computer simulation games such as the Wii also increased positive mood. The two studies are potentially applicable to the UK contexts.

Table 6.4: Characteristics of studies in Evidence Statement 6.4: Computer gaming

| Author Year | Quality rating | Study type | Sample size | Intervention content |
|------------------------|---------------------------|-------------------|--------------------|-----------------------------|
| | | | | |

| Country | | | | |
|-------------------------|---|----------------------------------|-------------------------------------|--|
| Studenski 2010 US | - | Uncontrolled before-and after | n= 36, 82% women, mean age 80 | Training and supervision using a video dance game targeted at older people |
| Kahlbaugh 2011 US | - | Uncontrolled before-and after | n= 35, 89% women, mean age 82 | Computerised simulation games |

Computer gaming technology

Two studies in the review looked specifically at computer gaming ICT interventions. In the USA **Studenski 2010** (-) evaluated interactive video dance games lasting 30 minutes per session for 24 sessions over three months. An unblinded and uncontrolled study was conducted for healthy volunteers in three senior living centres. The study was compared before and after the intervention without control group. There was a significant difference in self-reported mental health using the SF-36 mental components (mean difference: 3.9, $p=0.0180$).

A before and after study conducted in the USA in independent living residential apartments **Kahlbaugh, 2011** (-) observed the impacts of Wii video gaming console on mental health outcomes. The intervention included computerized simulation games such as bowling for 35 older people with the mean age of 82. Research assistants visited 28 healthy participants either to play Wii or to watch TV, and stayed with them for one hour per week over a 10-week period. Seven participants were in “no visit control” group. The individuals were paid \$5 per session. The older people playing Wii showed better positive mood relative to the TV group (33.15 vs. 30.83), although there was no difference in life satisfaction.

Discussion

The review findings suggest that there is a broad range of interventions and activities that can be used to promote and protects the mental wellbeing and independence of older people. These findings are in line with previous reviews on aspects of this literature (Windle, Francis

and Coomber 2011, Collins 2014, Dickens et al. 2011, Choi, Kong and Jung 2012, Park et al. 2014, Hagan et al. 2014), albeit with some differences in inclusion criteria given the focus here on older people who do not currently have substantive health and social care needs and largely on actions and activities which are not delivered by health and social care professionals.

Based on the reviewed evidence, it can be concluded that many aspects of the complex concept of mental wellbeing are strongly correlated with social resources (e.g. social contacts, social participation, social cohesion, sense of belonging) among older adults. These findings are also supported by previous reviews (Cattan et al. 2005, Masi et al. 2011, Collins 2014). These social aspects - that have been shown to be associated with positive mental health and mental wellbeing in a growing body of research - are often referred to as aspects of the theoretical framework of human social capital (Putnam 2000, Bourdieu 1986, Nyqvist et al. 2013).

The evidence in this review suggests that interventions that support social capital are promising as measures to promote mental wellbeing in old age, but there remain gaps in evaluation and in the quality of evaluations undertaken to date. By making efforts to support social contacts and relationships already established by older individuals, as well as aiming to enhance the development of new relevant social contacts when possible, important prerequisites for mental health in later life are created and secured.

Bronfenbrenner's ecological model (Bronfenbrenner 1979) could be a useful tool for the theoretical illustration of older people's psychosocial wellbeing (Forsman 2012, Greenfield 2012). According to this model, preferences, abilities and attitudes at the *individual level* form an important basis for mental health and experienced wellbeing in later life, at the same time as the social relationships at the *interpersonal level*, social contacts at *community level* and social participation at a *societal level* are central covariates of mental health in later life. Interventions that look at all of these issues have been identified in the review, including a cluster of evaluations, largely from Spain to promote continued participation of older people in higher education. This type of activity is well established in the UK, perhaps most immediately through the Open University.

There is also a growing evidence base which emphasises the role that arts and musical activities can play in promoting the wellbeing and independence of older people. In this evidence review, several studies explored the effectiveness of varying art forms – such as musical activities, singing, dance, storytelling or story writing, festivals – on mental wellbeing outcomes. The beneficial effects of art based programmes on various aspects of psychosocial wellbeing among older people is evident, however, the evidence base is heterogeneous and often from small scale studies, but this is an area where evaluation has taken place in the UK, for instance through the New Dynamics of Ageing Scheme. Nonetheless the strength of the evidence as presented in this review should be considered in the context of its multiple limitations. Art based group interventions constitute a new and emerging research field (Mental Health Foundation 2011); this makes interpreting the synthesised findings based on a low number of studies, or comparing the emerging effects of one art form against another difficult.

Windle and colleagues (Windle, Francis and Coomber 2011) have also in their review on programmes for prevention of social isolation and loneliness among older people evaluated art based group programmes. In the review from 2011, these programmes were categorised as wider community engagement initiatives, which in the analyses were compared to one-to-one and group service interventions. According to Windle and colleagues, there is good evidence that one-to-one interventions such as befriending reduce loneliness and improve mental wellbeing. However, it is also pointed out that interventions need to be adapted to the needs of the targeted older individuals. For social group interventions and wider community initiatives, there was similarly good evidence on positive effects on various aspects of wellbeing in later life. These findings are supported by the current review.

Another key point frequently emphasised in the reviewed literature is the importance of ensuring the involvement of older adults themselves in the planning of initiatives to enhance mental health and wellbeing, especially since the personal needs, preferences, and abilities vary to a great extent at the individual level (World Health Organization 2013, Futureage 2011). This is an area where the evidence is less definitive that would be desired in this review. More research is needed on the effectiveness of different ways of planning interventions, such that the older adults themselves are given an opportunity to be involved in intervention planning, community services and national policies. The limited participation of

men in these studies is a concern and potential research gap (See also the Barriers and Facilitators Review).

Based on the evidence review findings, there are opportunities to make use of new technologies and the social media, although the strength of the evidence is moderate and to some extent inconsistent. Nonetheless many studies illustrate how training to use the internet and computers, as well as positive aspects experienced through attainment of internet usage skills and inclusion in the online world, can contribute to mental wellbeing and independence. A key issue here is, however, may be the digital exclusion of older adults from the virtual world, this being a form of social exclusion in itself, although this may reduce over time (Note: This is also discussed in Review 2 on Barriers and Facilitators. Since older adults typically adopt new innovations at a slower pace (Carey and Elton 2010) the number of ICT users in the older population is generally lower worldwide although it is increasing in older age groups over time (Ofcom 2009, Pew Research Centre 2013) and they have received less attention in ICT-related research. One gap is that much of current research is focused primarily on online health information and health service development (Rios 2013) rather than looking at broader psychosocial and independence aspects of digital inclusion and there may be both positive and negative impacts of increased use of these technologies (van der Wardt, Bandelow and Hogervorst 2012).

Evidence Gaps and Recommendations

It is important firstly to place this evidence base within the context of the broader evidence base of actions to promote the mental wellbeing and independence of older people. There may be effective interventions that have been targeted towards people with more significant health issues (and thus excluded from this analysis) which would be beneficial for the broader population of older people. There will also be interventions targeted at the whole adult population that will have benefits for older people (and perhaps older men in particular). There are also settings that fall outside of this scope, such as actions in the workplace at the time of retirement which may help promote mental wellbeing and independence. A strategy to promote mental wellbeing and independence may also involve a combination of interventions and the benefits/weakness of different combinations of actions could be assessed in more detail.

One major gap appears to be a lack of UK based evidence, and more generally the use of more rigorous research designs with well-validated measures of mental wellbeing and /or independence. Well designed studies looking at loneliness in a UK context would be appropriate, for instance can the promising results of the volunteer befriending intervention recently published in Ireland be reported in a UK context? There is also a dearth of information in a UK context of the impact of interventions on BME population or for people with long standing disabilities that are not linked to ageing. There are substantive gaps on knowledge of interventions that are attractive and effective for men. Interventions to more effectively identify individuals at risk of deteriorating mental health and wellbeing need also to be assessed.

A number of significant evaluations of actions to promote the health and independence of older people have not fallen within the scope of this review because of a lack of specific data. Perhaps the most notable of these are the national (and local) evaluations of the Partnerships for Older People Projects (Windle et al. 2009, Roe et al. 2011). This programme which had 29 different local schemes, some targeted at people with low level or no health problems evaluated many interventions which are similar to those included in this review, however impacts on positive mental wellbeing were not specifically reported and moreover it was difficult, as the national review indicates, to attribute any one intervention to changes in health outcomes. One key issue is to make use of measures of positive mental wellbeing when evaluating such interventions.

It should also be noted that actions that would promote mental wellbeing and independence can be delivered by health, social care and occupational therapy professionals – there is an evidence base that can be drawn on in this area which would complement the interventions highlighted in this review. In the same way some actions that are targeted at people who are already living with health and social care needs may be equally appropriate for healthy older people. The findings here could be complemented by referring to some of this literature. The review did not identify many studies that specifically focus on evaluating methods for the identification of older people whose mental wellbeing and independence may be at risk, nor did it find material in respect of effective commissioning. Some of these gaps will however be addressed in complementary reviews on barriers and facilitators to action and mapping current UK practice, where discussions on commissioning, for instance in respect of POPS programme and the DWP LinkAge initiative to support older people have been identified (Davis and Ritters 2009).

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Appendices

Appendix 1: Glossary of terms

| Concept/term/measurement | Description |
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| Ando-Osada-Kodama (AOK) Loneliness Scale | <p>AOK loneliness scale is a revised Japanese language version of the revised University of California Los Angeles (UCLA) loneliness scale. Higher scores indicate higher rates of loneliness.</p> <p>Reference for further details: Russell, D., Peplau, LA., & Cutrona, CE. (1980). The revised UCLA Loneliness Scale: Concurrent and discriminant validity evidence. <i>Journal of Personality and Social Psychology</i>, 39, 472–480</p> |
| Anger/Irritability scale | <p>Anger/Irritability scale was used to measure anger using 4 items.</p> <p>Reference for further details: Pearlin, L. & Mullan, J. (1988). Sources and mediators of Alzheimer Disease caregiver stress: Preliminary scales for time-one interview. Unpublished material.</p> |
| Assertiveness scale | <p>Self-esteem: 10 item from an assertiveness scale were used. Scores on the scale range from 10–50, and a higher score indicates a more positive view of one's self.</p> <p>Brinkman, W. (1977) Een Assertiviteitsschaal [An assertivity scale II]. Amsterdam: Psychologisch Laboratorium, UVA.</p> |
| Assessment of Computer-Related Skills (ACRS) | <p>Assessment of Computer-Related Skills (ACRS) consists of 37 items used to describe the level of observed computer skills.</p> <p>Reference for further details: Fischl C, Fisher AG. Development and Rasch analysis of the Assessment of Computer-Related Skills. <i>Scand J Occup Ther</i> 2007;14:126–35.</p> |
| Back Depression Inventory | <p>Back Depression Inventory measures depressive symptoms using 21 sets of 4 statements that describe varying intensities of somatic and cognitive-affective symptoms of depression.</p> |

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| | <p>Reference for further details: Beck AT, Steer RA. Manual for the revised Beck Depression Inventory. San Antonio, TX: Psychological Corporation. 1987.</p> |
| Basic Psychological Needs Scales | <p>This scale has 21 items assessed on a seven-point scale (Deci & Ryan, 2000). The three subscales are conceptualised as competence, autonomy and relatedness. The points on the scale range from “1 = not at all true” to “7 = very true.”</p> <p>Reference for further details: Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. <i>Psychological Inquiry</i>, 11, 227–268.</p> |
| Canadian Occupational Performance Measure (COPM) | <p>Canadian Occupational Performance Measure (COPM) consists of three Visual Analogic Scale (VAS) used to assess the meaningfulness of the task, performance of the activities, and the level of satisfaction with the performance.</p> <p>Reference for further details: Law M, Baptiste S, Carswell A, McColl M-A, Polatajko H, Pollock N. Canadian Occupational Performance Measure. 4th ed. Toronto: CAOT Publications; 2005.</p> |
| Caregiving Satisfaction Scale | <p>Caregiving Satisfaction Scale is used to address caregivers' feelings of enjoyment, pleasure, appreciation, self-esteem and closeness within the relationship. The Scale includes 5 items which are rated on a 5-point scale (the higher the score, the greater is the degree of satisfaction in the caregiving relationship).</p> <p>Reference for further details: Lawton, M. P. (1988). Scales to measure competence in everyday activities. <i>Psychopharmacology Bulletin</i>, 74, 609-614.</p> |
| CASP-12 Measure of Quality of Life | <p>CASP-12 Measure of Quality of Life originally comprised 19 items representing the subscales of control, autonomy, self-realisation and pleasure. Control is conceptualised as the ability to actively intervene in one’s environment, whereas autonomy is the right to be free from the unwanted interference of others. Self-realisation represents “the more reflexive nature of life,” whereas pleasure refers to “the sense of fun derived from the more active (doing) aspects of life”</p> <p>Reference for further details: Wiggins, R. D., Netuveli, G., Hyde, E. M., Higgs, E. P., & Blane, E. D. (2007). The development and assessment of a quality of life measure (CASP-19) in the context of research on ageing. Retrieved from http://www.crm.umontreal.ca/Latent05/pdf/wiggins.pdf</p> |

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| Centre for Epidemiological Study Depression scale (CESD10) | <p>Centre for Epidemiological Study Depression scale (CESD10) includes 10 items design to measure depressive symptoms.</p> <p>Reference for further details: Andresen, E. M., Malmgren, J. A., Carter, W. B., & Patrick, D. L. (1994). Screening for depression in well older adults: Evaluation of a short form of the CESD. <i>American Journal of Preventive Medicine</i>, 10, 77–84.</p> |
| CES Depression scale | <p>CES Depression scale used to measure depressive symptoms. It includes 10 questions rated on a three-point scale (higher scores indicate more depressive symptoms).</p> <p>Reference for further details: Kohout F.J. et al. (1993). Two shorter forms of the CES-D Depression Symptoms Index. <i>Journal of Aging and Health</i>, 5 (2), 179–193.</p> |
| CogniFit Assessment Battery | <p>CogniFit Assessment Battery developed to assess cognitive ability.</p> <p>Reference for further details: K.L. Gigler, K. Blomeke, E. Shatil, S. Weintraub, P.J. Reber, Preliminary evidence for the feasibility of at-home online cognitive training with older adults, <i>Gerontechnology</i> 2013;12(1):26-35; doi:10.4017/gt.2013.12.1.007.00</p> |
| CogState Assessment Battery | <p>CogState assessment battery includes a range of tasks intended to measure cognitive function.</p> <p>Reference for further details: Maruff P, Thomas E, Cysique L, Brew B, Collie A, Synder P, Pietrzak R. Validity of the CogState Brief Battery: relationship to standardized tests and sensitivity to cognitive impairment in mild traumatic brain injury, schizophrenia, and AIDS dementia complex. <i>Archives of Clinical Neuropsychology</i> 2009;24(2):165-178; doi:10.1093/arclin/acp010</p> |
| Computer Anxiety Subscale of the Computer Attitude Scale | <p>Computer Anxiety Subscale of the Computer Attitude Scale is designed to measure the level of anxiety</p> <p>Reference for further details: Gressard, C.P., Loyd, B.H. (1986). Validation studies of a new computer attitude scale. <i>Association for Educational Data Systems Journal</i>, 18(4):295-301.</p> |
| Computer User Self-Efficacy Scale | <p>Computer User Self-Efficacy Scale consists of 30 items rated on a 6-point Likert-type scale ranging from 1=strongly disagree to 6=strongly agree.</p> <p>Reference for further details: Cassidy S, Eachus P. Development of the Computer User Self-Efficacy (CUSE) Scale: Investigating the relationship between computer self efficacy gender and experience</p> |

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| | with computers. <i>Journal of Educational Computing Research</i> . 2002; 26 (2): 169-189. |
| CUBRECAVI Quality of life | Higher scores indicate an improvement. Fenandez-Ballesteros R, Zamarron MB (1996) ei Cuestionario Breve de Caidad de Vida (CUBRECAVI) En culidad de vida en la rejet en distintos contextos. Madrid: IMSERSO. |
| De Jong Scale Gierveld Scale | The de Jong Gierveld Scale (de Jong Gierveld & van Tilburg, 1999) is an 11-item self-report measure of social loneliness The scale is based on a cognitive theoretical approach to loneliness, where loneliness is seen as a subjective experience and therefore not directly related to situational factors Reference for further details: de Jong Gierveld, J., van Tilburg, T. (1999). Manual of the Loneliness Scale. Available online at: http://home.fsw.vu.nl/tg.van.tilburg/manual_loneliness_scale_1999.html |
| Duke Social Support Index (DSSI) | The Duke Social Support Index (DSSI, Koenig et al. 1993) is intended to measure social interaction and subjective support, as well as a composite measure for overall social support High scores indicates strong social support Reference for further details: Koenig, HG., Westlund, RE., George, LK., Hughes, DC., Blazer, DG., Hybels, C. (1993). Abbreviating the Duke Social Support Index for use in chronically ill elderly individuals. <i>Psychosomatics</i> , 34, 61–9 |
| Generativity | An indicator of psychosocial health according to Erikson’s theory (1959) of the psychosocial development across the lifespan This concept captures the stage in adulthood when contributing to society and doing things to benefit future generations are important needs Also see ‘Integrity’ Reference for further details: Erikson, EH., Paul, IH., Heider, F., & Gardner, RW. (1959). <i>Psychological issues (Vol. 1)</i> . International Universities Press |
| Geriatric Depression Scale (GDS) | A new Geriatric Depression Scale (GDS) designed specifically for rating depression in the elderly was tested for reliability and validity and compared with the Hamilton Rating Scale for Depression (HRS-D) and the Zung Self-Rating Depression Scale (SDS). In constructing the GDS a 100-item questionnaire was administered to normal and severely depressed subjects. The 30 questions most highly correlated with the total scores were then selected and readministered to new groups of elderly subjects. These subjects were classified as normal, mildly depressed or severely depressed on the basis of Research |

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| | <p>Diagnostic Criteria (RDC) for depression. The GDS, HRS-D and SDS were all found to be internally consistent measures, and each of the scales was correlated with the subject's number of RDC symptoms. However, the GDS and the HRS-D were significantly better correlated with RDC symptoms than was the SDS. The authors suggest that the GDS represents a reliable and valid self-rating depression screening scale for elderly population</p> <p>http://www.ncbi.nlm.nih.gov/pubmed/7183759</p> |
| Family and Friendship Contacts Scale | <p>Family and Friendship Contacts Scale is used to assess the frequency of contacts with children, grandchildren, siblings, other relatives, neighbours, and friends or acquaintances.</p> <p>Reference for further details: Andersson L. (1984) Intervention against loneliness in a group of elderly women: a process evaluation. <i>Human Relations</i> 37, 295–310.</p> |
| General Health Questionnaire (GHQ-20) | <p>General Health Questionnaire (GHQ-20) includes 20 items. In the study by Thorp et al. (2008) it was used to assess mental health.</p> <p>References for further details: Goldberg D. (1985) Identifying psychiatric illness among general medical patients. <i>British Medical Journal</i> 291, 161– 162.</p> <p>Goldberg D. & Williams P. (1991) <i>A User's Guide to the General Health Questionnaire</i>. NFER-Nelson, London.</p> |
| Geriatric Depression Scale-15 (GDS-15) | <p>Geriatric Depression Scale-15 (GDS-15) designed to assess the presence of depressive symptoms in older people.</p> <p>Reference for further details: Sheikh, J. I., & Yesavage, J. A. (1986). Geriatric Depression Scale (GDS): recent evidence and development of a shorter version. In T. L. Brink (Ed.), <i>Clinical gerontology: A guide to assessment and intervention</i> (pp. 165). New York: Haworth Press.</p> |
| Goal Attainment Scaling (GAS) | <p>Goal Attainment Scaling (GAS) is used to assess the degree of goal attainment.</p> <p>Reference for further details: Kiresuk JT, Sherman ER. Goal attainment scaling: A general method for evaluating comprehensive community mental health programs. <i>Community Ment Health J</i> 1968;4:443–53.</p> |
| Hartig's 13-item Short-Version Revised Perceived Restorativeness Scale (SPRS) | <p>Short-Version revised Perceived restorativeness Scale consisted of being way, Fascination, and compatibilit. All items can be measured as 1 (strongly disagree) to 5 (strongly agree).</p> <p>Hartig, T. & Staats, H. (2003) guest editors' introduction: restorative environments. <i>Journal of</i></p> |

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| | Environmental Psychology, 23 (2), 103-107. |
| Health Self-Care Neglect Scale (HSCN) | Health Self-Care Neglect Scale (HSCN) developed to measure the caregiver's neglect of health-related self-care behaviours'. The Scale includes about 10 items related to self-care. |
| Integrity | <p>An indicator of psychosocial health according to Erikson's theory (1959) of the psychosocial development across the lifespan</p> <p>This phase occurs during old age and is focused on reflecting back on life</p> <p>Those who feel proud of their accomplishments in life will feel a sense of integrity, while those who has many regrets will experiences feelings of despair</p> <p>Reference for further details: Erikson, E. H., Paul, I. H., Heider, F., & Gardner, R. W. (1959). <i>Psychological issues (Vol. 1)</i>. International Universities Press</p> |
| Japanese N-Mental Status for the Elderly Scale | Japanese N-Mental Status for the Elderly Scale: The NM scale is a 0 -50 point rating instrument for determining the mental status of older people. Lower scores indicate lower mental status. |
| Japanese version of the LSI-A scale | <p>The LSI-A measures the long-term cognitive evaluation of a person's life as well as transient affective feelings. A 10-item Japanese version of the LSI-A scale was used that has the same structure as Liang's (1984) (scores ranged from 10 to 30).</p> <p>Liang, J (1984) Dimensions of the Life Satisfaction Index A: A structural formulation. <i>Journal of Gerontology</i>, 39, 613-622.</p> |
| Kambara's 18-item version of Locus of Control (LOC) | <p>Kambara's 18-item version of Locus of Control (LOC) was also used (score ranging 18-72; higher scores indicate more internal tendency)</p> <p>Kambara, M., Higuchi, K., & Shimizu, N (1982). Development of locus of control scale: Reliability and validation. <i>Japanese Journal of Educational Psychology</i>, 30, 302-307. (in Japanese)</p> |
| Life Satisfaction Scale (LSS) | <p>The Life satisfaction Scale (LSS) is an adaptation of Back and Guptill's (1966) questionnaire designed to measure the level of life satisfaction in older people</p> <p>This scale includes seven 5-point, bipolar items, such as 'my life is: interesting-boring; hopeful-hopeless'</p> <p>High scores indicate better life satisfaction</p> |

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| | <p>Reference for further details: Back, KW. & Guptill, CS. (1966). Retirement and self-ratings. In IH. Simpson, JC. McKinney, & JJ. Spengler (Eds.), <i>Social aspects of aging</i> (pp. 120–129). Durham, NC: Duke University Press</p> |
| Locus of control (and MHLC Scale) | <p>The locus of control construct was first derived from Rotter’s social learning theory, which states that behavior is a function of the expectancy that a specific action will lead to a specific goal or outcome, combined with the reinforcement value of that goal or outcome (Rotter, 1954)</p> <p>For example, the Multidimensional Health Locus of Control (MHLC) Scale (Wallston & Wallston, 1978) is used to measure whether an individual believes his or her health is controlled by his/herself, by chance, or by significant others</p> <p>References for further details: Rotter, JB. (1954). <i>Social learning and clinical psychology</i>. Englewood Cliffs, NJ: Prentice-Hall</p> <p>Wallston, KA. & Wallston, BS. (1978). Development of the multidimensional health locus of control scales. <i>Health Education Monographs</i>, 6(2):160-170.</p> |
| Loneliness literacy/Loneliness Literacy Scale | <p>The Loneliness Literacy Scale was developed and validated to measure determinants relating to the behaviours ‘becoming or staying socially active’ and ‘searching for support’. This 22-item scale consists of 22 items divided over four subscales, namely, motivation (referring to awareness about, expected outcomes of, and intention to use health and welfare services), self-efficacy (referring to perceived ability to interact socially), perceived social support (referring to previously experienced social support and the motivation to comply with the opinion of important others), and subjective norm (referring to respondents’ personal opinion and the perceived opinion of others with regard to participating in social activities)</p> <p>Reference for further details: Honigh-de Vlaming R, Haveman-Nies A, Bos-Oude Groeniger I, Hooftvan Huysduynen E, De Groot CPGM, Van’t Veer P: Loneliness literacy scale: development and evaluation of an early indicator for loneliness prevention. <i>Soc Indic Res</i> 2013, 112(1). doi:10.1007/s11205-013-0322-y</p> |
| Loyola Generativity Scale | <p>There are 20 questions about generativity. For each of the following statements, please indicate how often the statement applies to you, by marking either a "0," "1," "2," or "3" in the space in front.</p> <p>Mark "0" if the statement <u>never</u> applies to you.</p> <p>Mark "1" if the statement only <u>occasionally</u> or <u>seldom</u> applies to you.</p> <p>Mark "2" if the statement applies to you <u>fairly often</u>.</p> <p>Mark "3" if the statement applies to you <u>very often</u> or <u>nearly always</u>.</p> |

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| | <p>McAdams, D.P., & de St. Aubin, E. (1992). A theory of generativity and its assessment through self-report, behavioural acts, and narrative themes in autobiography. <i>Journal of Personality and Social Psychology</i>, 62, 1003-1015</p> <p>McAdams, D.P., Hart, H.M., & Maruna, S. (1998). The anatomy of generativity. In D.P. McAdams and E. de St. Aubin (Eds.), <i>Generativity and adult development: How and why we care for the next generation</i> (pp. 7-43). Washington, D.C.: APA Press.</p> <p>http://www.sesp.northwestern.edu/foley/instruments/lgs/</p> <p>http://www.sesp.northwestern.edu/foley/instruments/lgs/scoringlgs/</p> |
| Lubben's Social Network Scale – Abbreviated (LSNS-A) | <p>The Lubben's Social Network Scale-Abbreviated (LSNS-A) is a 6-item scale measuring contact and support from neighbours and friends in which higher scores indicate larger social networks</p> <p>References for further details:</p> <p>Lubben, J., & Gironde, M. (2003). Centrality of social ties to the health and well-being of older adults. In B. Berkman & L. Harootyan (Eds.), <i>Social work and health care in an aging society</i> (pp. 319-350). New York: Springer Publishing</p> <p>Lubben, J., & Gironde, M. (2000). Social support networks. In D. Osterweil, K. Brummel-Smith, & J.C. Beck (Eds.), <i>Comprehensive geriatric assessment</i>. New York: McGraw Hill</p> |
| Measures of Psychosocial Development (MPD) | <p>The Measures of Psychosocial Development (MPD, Hawley, 1988) is a self-report measure based on Erikson's eight-stage theory of psychosocial development</p> <p>The MPD provides an index of overall psychosocial health, and measures positive and/or negative stage attitudes for each of Erikson's eight stage conflicts</p> <p>The index has 27 scales, representing the dynamics outlined in Erikson's work and higher points on each scale indicates better wellbeing</p> <p>Reference for further details: Hawley, GA. (1988). <i>Measures of psychosocial development</i>. Odessa, FL: PAR</p> <p>Also see 'Generativity' and 'Integrity'</p> |
| Medical Outcomes Study Social Support Scale | <p>The Medical Outcomes Study (MOS) Social Support Scale is an 18-item self-administered questionnaire, measuring overall social support and four sub-scale concepts (emotional/informational support, tangible support, affectionate support, positive social interaction)</p> <p>Reference for further details: Sherbourne CD, Stewart AL. (1991). The MOS social support survey. <i>Social Science & Medicine</i>, 32, 705-14</p> |

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| Mental Health Index | <p>The mental health index-5 (MHI-5, Berwick et al., 1991) is used to assess psychological well-being. The measurement includes questions on positive and negative mood (5 items) and higher scores indicating better psychological well-being</p> <p>Reference for further details:</p> <p>Berwick DM, Murphy JM, Goldman PA, Ware JE Jr, Barsky AJ, Weinstein MC. (1991). Performance of a five-item mental health screening test. <i>Med Care</i>;29:169–176</p> |
| Mini-Mental State Exam (MMSE) | <p>The mini-mental state examination (MMSE) or Folstein test is a brief 30-point questionnaire test that is used to screen for cognitive impairment. It is commonly used in medicine to screen for dementia. It is also used to estimate the severity of cognitive impairment and to follow the course of cognitive changes in an individual over time, thus making it an effective way to document an individual's response to treatment.</p> <p>http://www.guysandstthomas.nhs.uk/resources/our-services/acute-medicine-gi-surgery/elderly-care/mini-mental-state-evaluation.pdf</p> |
| Mood: Profile of Mood States (POMS), subscales such as tension, anger, fatigue | <p>The Profile of Mood States (POMS; McNair et al., 1971) is a questionnaire that measures fluctuations of affective mood states. Specifically, it measures six identifiable mood states: (1) Tension, (2) Depression, (3) Vigour, (4) Fatigue, (5) Anger, and (6) Confusion. POMS is a good measurement to assess acute effects of a treatment or intervention. In this study, we have used a Spanish adaptation of POMS (Balaguer, 1993) to assess possible affective changes in mood induced by piano lessons, since it has shown good psychometric properties. This version of POMS consists of 58 items composed by five-point Likert-type scale. Higher scores in this questionnaire indicate more psychological distress, except in the vigour scale that is reversed.</p> <p>Balaguer, I. (1993). El perfil de los estados de ánimo (POMS): baremo para estudiantes valencianos y su aplicación en el contexto deportivo. <i>Rev. Psicol. del Deport.</i> 4, 39–52</p> <p>McNair D, Lorr M, Droppleman L (1971). Profile of Mood States. SanDiego, CA: Educational and industrial testing services.</p> |
| Multidimensional Scale of Perceived Social Support (MSPSS) | <p>Multidimensional Scale of Perceived Social Support (MSPSS) includes 12 statements. The degree of agreement with the statements is assessed using a 7-point scale ranging from 1 (very strongly disagree) to 7 (very strongly agree).</p> <p>Reference for further details: Zimet, G. D., Dahlem, N.W., Zimet, S. G. and Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. <i>Journal of Personality Assessment</i>, 52, 1, p 30-41.</p> |

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| NEO Five Factor Inventory (NEO-FFI) | <p>Previous item factor analyses and readability analyses suggested that 14 of the 60 items in the NEO Five-Factor Inventory might usefully be replaced. New analyses in high school (N=1959) and adult (N=1492) samples led to the selection of new items from the remaining pool of Revised NEO Personality Inventory items. The resulting scales showed modest improvements in reliability and factor structure, and equivalent validity. These new scales should be appropriate for most respondents age 14 and up.</p> <p>http://asm.sagepub.com/content/11/3/207.abstract http://cda.psych.uiuc.edu/multivariate_fall_2013/neo_mccrae_costa.pdf</p> |
| Observed Tasks of Daily Living – Revised (OTDL-R) | <p>Observed Tasks of Daily Living – Revised (OTDL-R) is design to measure the ability of older people to complete everyday tasks within a laboratory environment. It includes nine separate tasks and 13 questions.</p> <p>Reference for further details: Diehl MK, Marsiske M, Horgas AL, Rosenberg A, Saczynski JS, Willis SL. The Revised Observed Tasks of Daily Living: a performance-based assessment of everyday problem solving in older adults. <i>Journal of Applied Gerontology</i> 2005;24(3):211- 230; doi:10.1177/0733464804273772</p> |
| Older Adults’ Computer Technology Attitudes Scale (OACTAS) | <p>Older Adults’ Computer Technology Attitudes Scale (OACTAS) consists of 17 – negatively worded – items coded using a 7-point Likert-type scale.</p> <p>References for further details: Laganá L. Enhancing the attitudes and self-efficacy of older adults towards computers and the Internet: Results of a pilot study. <i>Educational Gerontology</i>. 2008; 34: 831-843.</p> <p>Laganá L, Oliver T, Ainsworth A, Edwards M. Enhancing computer self-efficacy and attitudes in multiethnic older adults: A randomized controlled study. <i>Ageing & Society</i>. 2011; 31 (6): 911-933.</p> |
| Pearlin and Schooner Mastery Scale | <p>Pearlin and Schooner Mastery Scale is used to assess the amount of control people experience over their lives. It consists of 7 items rated on a five-point scale with higher scores indicating a greater sense of mastery.</p> <p>Reference for further details: Pearlin LI, Schooler C. The structure of coping. <i>J Health Soc Behav</i> 1978;19:2–21.</p> |
| Philadelphia Geriatric Center Morale Scale | <p>The 22-item Philadelphia Geriatric center (PGC) Morale Scale was subjected to a series of principal component analyses utilizing different item pools and rotating differing numbers of factors. Agitation, Attitude Toward Own Aging, and Lonely Dissatisfaction, utilizing 17 of the original items. Related domains of self-rated health, social accessibility, generalized attitude toward aging, and positive affect</p> |

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| | <p>were suggested as worthy of further exploration as dimensions of morale. Higher score indicates an improvement.</p> <p>Lawton MP (1975) The Philadelphia Geriatric Center Morale Scale: A review. <i>Journal of Gerontology</i>, 30: 85-89. http://geronj.oxfordjournals.org/content/30/1/85.abstract</p> |
| Profile of Mood States (POMS) | <p>A questionnaire that measures fluctuations of affective mood states. Specifically, it measures six identifiable mood states: (1) Tension, (2) Depression, (3) Vigour, (4) Fatigue, (5) Anger, and (6) Confusion. POMS is a good measurement to assess acute effects of a treatment or intervention</p> <p>McNair, D., M. Lorr, et al. (1971). Profile of Mood States. San Diego, California, Educational and industrial testing services.</p> |
| Positive and Negative Affect Scale (PANAS) | <p>The PANAS measures two mood dimensions, positive affect (PA) and negative affects (NA), using 20 items High PA reflects a state of high energy, full concentration, and pleasurable engagement Low PA is characterized by sadness and lethargy Negative affects is a general dimension of subjective distress and unpleasant engagement, which include aversive mood states like anger, contempt, disgust, guilt, fear, and nervousness Low NA reveals a state of calmness and serenity</p> <p>Reference for further details: Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. <i>Journal of Personality & Social Psychology</i>, 54, 1063–1070</p> |
| Psychological General Well-Being (PGWB) Schedule | <p>The PGWB schedule is a 22-item index developed to measure self-representations of interpersonal affective or emotional states reflecting a sense of subjective well-being or distress.</p> <p>Reference for further details: Dupuy, H. J. (1984). The psychological well-being (PGWB) index. In N. K. Wenger, M. E. Mattson, C. D. Furberg, & J. Elinson (Eds.) <i>Assessment of quality of life in clinical trials of cardiovascular therapies</i> (pp. 170-183). United States: Le JacqPublishing, Inc.</p> |
| Quality of Life Questionnaire in Alzheimer's Disease (QOL-AD) | <p>Quality of Life Questionnaire in Alzheimer's Disease (QOL-AD) measures participant's own subjective satisfaction with their quality of life. The questionnaire includes 13 items related to family life, financial health, memory, and physical health.</p> <p>Reference for further details: Logsdon RG, Gibbons LE, McCurry SM, Teri L. Assessing quality of life in older adults with cognitive impairment. <i>Psychosomatic Medicine</i> 2002;64(3):510-519;</p> |

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| | www.psychosomaticmedicine.org/content/64/3/510.full ; retrieved July 1, 2013 |
| RAND Social Health Battery | <p>The RAND Social Health Battery is an 11-item measure that assesses respondents' resources for social support and the frequency of social interactions.</p> <p>Donald CA, Ware JE Jr. (1984). The measurement of social support. <i>Research in Community and Mental Health</i>, 4, 325-370.</p> <p>Donald CA, Ware JE Jr. (1984). The measurement of social support. <i>Research in Community and Mental Health</i>, 4, 325-370.</p> <p>Ortmeir BG. (1993). Use of the Social Health Battery in an elderly population. <i>Psychological Reports</i>, 72(3 Pt1), 1001-1002.</p> |
| Relative Stress scale | <p>Relative Stress scale consists of 15 items and is used to measure burden of care.</p> <p>Reference for further details: Greene J.G., Smith R., Gardiner M. & Timbury G.C. (1982) Measuring behavioural disturbance of elderly demented patients in the community and its effects on relatives: a factor analytic study. <i>Age and Ageing</i> 11, 121–126.</p> |
| Religiosity | <p>Sociological term used to refer to the numerous aspects of religious activity, dedication and belief of the individual</p> <p>Religiosity has been described as particular beliefs and practices that occur in social entities or institutions in “search for the sacred” (i.e., God) (Miller & Thoresen, 2003; Hill & Pargament, 2003)</p> <p>Reference for further details: Miller, W. R., & Thoresen, C. E. (2003). Spirituality, religion, and health: An emerging research field. <i>American Psychologist</i>, 58, 24–35</p> <p>Hill, C., & Pargament, I. (2003). Advances in the conceptualization and measurement of religion and spirituality. Implications for physical and mental health research. <i>American Psychologist</i>, 58(1), 64–74</p> |
| Rosenberg Self-Esteem Scale | <p>The scale is a ten item Likert scale with items answered on a four point scale – from strongly agree to strongly disagree. The original sample for which the scale was developed consisted of 5,024 High School Juniors and Seniors from 10 randomly selected schools in New York State.</p> <p>Instructions: Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle SA. If you agree with the statement, circle A. If you disagree, circle D. If you strongly disagree, circle SD</p> <p>http://www.yorku.ca/rokada/psycetest/rosenbrg.pdf</p> |

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| | http://www.wwnorton.com/college/psych/psychsci/media/rosenberg.htm |
| Satisfaction with life Scale (Diener et al, 1985) | <p>Satisfaction with life Scale from 1 to 5 on a five-point scale indicating higher mean values with a stronger sense of wellbeing.</p> <p>Diener, E., Emmons, R., Larsen, J., & Griffin, S. (1985). The Satisfaction With Life Scale. <i>J Personality Assessment</i>, 49(1), 71-75. http://www.tbimpact.org/cde/mod_templates/12_F_07_Satisfaction_With_Life_Scale.pdfnger sense of wellbeing.</p> |
| Satisfaction with Life Scale (Pavot and Diener, 1993) | <p>The Satisfaction with Life Scale consists of five items that reflect a cognitive evaluation of life. Scores on the scale range from 5–25; a higher score indicates a higher level of satisfaction with life. This scale has good psychometric properties Satisfaction with Life Scale (Pavot and Diener 1993). Items include: “In most ways my life is close to my ideal,” and “I am satisfied with my life.”</p> <p>Pavot, W., & Diener, E. (1993). Review of the satisfaction with life scale. <i>Psychological Assessment</i>, 5, 164–172.</p> |
| Scales of Psychological Well-Being | <p>The Ryff inventory consists of either 84 questions (long form) or 54 questions (medium form). There is also a short form, but it is statistically unreliable and therefore should not be used for assessment. Both the long and medium forms consist of a series of statements reflecting the six areas of psychological well-being: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. Respondents rate statements on a scale of 1 to 6, with 1 indicating strong disagreement and 6 indicating strong agreement.</p> <p>http://www.liberalarts.wabash.edu/ryff-scales/</p> |
| Scale of Well-being (EBP) | <p>The Scale of Well-being (EBP): subjective psychological well-being and relationship with partner (Sanchez Canovas 1998).</p> <p>The Scale of Well-being – EBP (Sanchez Caanovas, 1998) consists of 65 items segmented in four subscales. These are subjective psychological well-being, material well-being, labour well-being, and relationship with partner. In this study, we applied the first three scales. The first scales of subjective well-being and material well-being are numbered correlatively; so, at least these two always have to be applied together to offer a global measure. The measure in every item is from 1 to 5 in a Likert-type scale.</p> |
| Self-Anchoring Scale (SAS) | <p>The Self-Anchoring Scale (SAS, Cantril, 1965) consists of a vertical scale, from 0–10, on which the degree of satisfaction with one’s life at three points in time is marked (higher score indicating better life satisfaction): currently, five years ago and in five</p> |

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| | <p>years time (estimated)</p> <p>Reference for further details: Cantril, H. (1965). <i>The pattern of human concerns</i>. New Brunswick, NJ: Rutgers University Press</p> |
| Self-efficacy | <p>Bandura (1977) developed the concept of self-efficacy, which is similar to the concept of self-esteem (i.e. how much the individual values his/herself), but focuses on the beliefs of one's own capacity to handle different situations and assignments</p> <p>Reference for further details: Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioural change. <i>Psychological Review</i>, 84, 191-215</p> |
| Self-Management Ability (SMA) Scale | <p>Self-Management Ability (SMA) Scale is designed to measure self-management ability. The scale includes 6 subscales each of which contains 5 items. The higher scores indicate higher self-management ability.</p> <p>Reference for further details: Schuurmans H, Steverink N, Frieswijk N, Buunk BP, Slaets JPJ, Lindenberg S. How to measure self-management abilities in older people by self-report? The development of the SMAS-30, unpublished manuscript.</p> |
| Self-Management Ability Scale (SMAS-30) | <p>Self-Management Ability Scale (SMAS-30) includes 30 items and 6 subscales each related to one of the six self-management abilities. The items are rated on either a 5-point or 6-point Likert scale.</p> <p>Reference for further details: Schuurmans, H., Steverink, N., Frieswijk, N., Buunk, B. P., Slaets, J. P. J., & Lindenberg, S. (2005). How to measure self-management abilities in older people by self-report: The development of the SMAS-30. <i>Quality of Life Research</i>, 14, 2215–2228.</p> |
| Sense of mastery (perceived control) | <p>Pearlin's (Pearlin & Schooler, 1978) Sense of Mastery scale with its seven statements is used as an indicator for positive mental health and coping abilities or as a protective determinant of mental health problems</p> <p>Higher scores on the scale indicates better sense of mastery</p> <p>Reference for further details: Pearlin, L. & Schooler, C. (1978). The structure of coping. <i>Journal of Health & Social Behavior</i>, 19, 2-21</p> |
| SF-36/12 | <p>The Short Form Health Survey (SF 36 or SF 12, including 36 or 12 items) is a widely used, self-administered questionnaire on the individual's overall health status. It provides separate scores for</p> |

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| | <p>physical, mental an social aspects of health</p> <p>Reference for further details available at: http://www.rand.org/health/surveys_tools/mos/mos_core_36item.html</p> |
| Social Production Function Index Level Scale (SPF-IL) | <p>Social Production Function Index Level Scale (SPF-IL) is used to as a measure of wellbeing. It includes 15 items with 5 sub-scales scored on a 4-point Likert scale.</p> <p>Reference for further details: Nieboer, A., Lindenberg, S., Boomsma, A., & Van Bruggen, A. C. (2005). Dimensions of well-being and their measurement: The SPF-IL Scale. <i>Social Indicators Research</i>, 73, 313–353.</p> |
| Social situations inventory | <p>Four of the five subscales of the social situations inventory (IOA) were used to measure the ability to take initiative in social relationships. The IOA is a self-report questionnaire based on an interactive concept of social anxiety. It has 35 items providing scores for five subscales: ‘initiating contact’, ‘expressing an opinion’, expressing criticism’, making a compliment’ and ‘positive self-esteem’. The self-esteem subscale was excluded since it does not directly involve taking initiative in social situations. Participants were asked how often certain situations happened (e.g. ‘Initiating a conversation with a stranger’; ‘Asking a friend to help you with something’).</p> <p>Van Dam-Baggen, C.M.J., & Kraaimaat, F.W. (1990) Inventarisatielijst omgaan met anderen. Handleiding [Manual, Inventory of Social Skills] . Lisse, The Netherlands: Sets & Zeitlinger.</p> |
| Social Support List-Interactions | <p>The subjective appraisal of received social support by the recipients themselves, measured with the Social Support List (SSL-12). This is a reliable and valid short version of the Social Support List–Interactions, assessing the extent of perceived received social support by means of social interactions with members of the primary social network (15). The SSL-12 consists of 12 items on 3 scales, with possible item scores ranging from 1 (seldom or never) to 4 (very often). The 3 scales are “everyday social support” (referring to social companionship and daily emotional support), “support in problem situations” (referring to instrumental, informational support, and emotional support in times of trouble), and “esteem support” (referring to support resulting in self-esteem and approval).</p> <p>Kempen GIJM, Van Eijk LM (1995) The psychometric properties of the SSL12-I, a short scale for measuring social support in the elderly. <i>Soc Indic Res</i> 1995,35 (3):303–312</p> |
| Social support questionnaire (Van Tilburg, 1988) | <p>Social support questionnaire developed by Van Tilburg (1988). This questionnaire consists of 10 items on the subjective evaluation of social support in a relationship. Two kinds of social support are included, daily social support (e.g. I notice that he/she cares for me) and social support when problems arise (e.g. I can go to him/her when I need a shoulder to cry on). Each type of social support is measured by five items which are scored on a three point Likert-type scale ranging from 1 (never) to 3 (often).</p> |

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| | <p>The sum of the two types of social support represents the total experienced social support with a range of 10 (no support) to 30 (maximum support).</p> <p>Van Tilburg TG (1988) Verkregen en gewenste ondersteuning in het licht van eenzaamheidservaringen (Obtained and desired social support in association with loneliness). Doctoral dissertation, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands. Retrieved from http://hdl.handle.net/1871/17014</p> |
| Social Support Questionnaire (Parmar et al, 1998) | <p>The Social Support Questionnaire designed by Parmar et al. (1998) studies the sources of social support (relatives, friends, and professionals) of the subjects, as well as the type of help obtained from these sources of support (informative, emotional and or economic). The questionnaire consists of several open items that result in the following categories: support received from children, from the husband or wife, from brothers or sisters, from family, from friends, from doctors, from a financial adviser or attorney, from professors and from the church. Aside from these eight categories, another global measure is obtained that corresponds to the perception of the support that the participants would like to receive in general terms.</p> <p>Parmar, P., Harkness, S., Hidalgo, V., Axia, G., Welles-nystrom, B., Kolar, V., Pai, S., & Super, C. M. (1998). The role of the extended family in providing parenting and support in European, Euro-American and Euro-Australian communities. Poster presentado en el XVth Biennial ISSBD Meetings Berne Switzerland. July 1st to 4th, 1998.</p> |
| State-Trait-Anxiety-Inventory (STAI Spanish version) | <p>State-Trait-Anxiety-Inventory contains 40 items. The items are grouped into two subscales related to anxiety as a general personality trait and as an anxiety caused by external factors.</p> <p>Reference for further details: Spielberger, C. D., Gorsuch, R. L., & Lushene, R. E. (1970). STAI, manual for the state-trait anxiety inventory. California: Consulting Psychologist Press. (translated into Spanish by Seisedos N. en 1982 and published by TEA Editions, 1982).</p> |
| Tennessee Self-Concept Scale (TSCS) | <p>The Tennessee Self-Concept Scale (TSCS). The Tennessee Self-Concept Scale (Fitts & Warren, 1996) is a widely used self-report measure consisting of six self-concept scales (physical, moral, personal, family, social and academic or work) that yield a total summary score for total self-concept and conflict. Respondents are asked to report how true each statement is about them using a five-point scale ranging from Completely False to Completely True. Negatively worded items are reverse scored. A summed score for a subscale between 40 and 60 is considered within normal limits, while scores above 70 and below 30 are considered outside of the desirable range. A fairly substantial revision was undertaken</p> |

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| | <p>with the TSCS recently so that some items were eliminated and some added. Over the period of this study, both the older and the newer version of the scale were used, preventing a more complete analysis of the data. We cross-walked the old version of the scale onto the new version and were able to analyse the primary subscales, less the academic scale. We were also unable to compute a total score without substantial imputation of missing data (any respondent missing more than 25% of the items was excluded from the analyses).</p> <p>http://www.psychassessments.com.au/products/236/prod236_report1.pdf http://www.ravansanji.ir/?Ess2017TSCS</p> |
| Third age | <p>The period in life of active retirement, following middle age</p> <p>The third age is often described as the period in the life course that occurs after retirement but prior to the onset of disability, revealing a period in which individuals have the capacity to remain actively engaged</p> |
| TMIG Index of Competence | <p>TMIG Index of Competence is a multidimensional, 13-item index of competence which consists of the first-order factors including Instrumental Self-Maintenance, Intellectual Activity and Social Role, and the second-order factor is Competence. The responses to each item were scored 1 for (“yes” - able to do) or 0 for (“no” -unable) with the maximum score of 13 points.</p> |
| Transactions Scale (SSQT) | <p>Social Support Questionnaire for Transactions (SSQT) is comprised of two scales, a 14-item social-emotional support and a five-item instrumental support, a 13-item social-emotional support and a four-item instrumental support scale were retained. The items are measured on a Likert scale (1 = strongly agree to 5 = strongly agree)</p> <p>Rosenbaum, M.S. & Massiah, C. (2007). When customers receive support from other customers: exploring the influence of intercustomer social support on customer voluntary performance. <i>Journal of Service Research</i>, 9, 257-270.</p> |
| UCLA Loneliness Scale | <p>The UCLA Loneliness Scale (Russell, 1996) is a 20-item scale measuring the construct of loneliness, with higher scores indicating greater loneliness</p> <p>Reference for further details: Russell, D.W. (1996). UCLA Loneliness Scale (version 3): Reliability, validity, and factor structure. <i>Journal of Personality Assessment</i>, 66, 20-40</p> |
| Visual Analogic Scale (VAS) | <p>Visual Analogic Scale (VAS) measures the degree of different emotions such as anxiety, joy, sadness, and relaxation experienced using a seven-point scale.</p> <p>Reference for further details: Gross, J. J., & Levenson, R. W. (1995). Emotion elicitation using films.</p> |

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| | Cognition & Emotion, 9, 87–108. |
| World Health Organization quality of life assessment (WHOQOL) | <p>World Health Organization Quality of Life Brief Questionnaire (WHOQOL-BREF; Kuyken et al., 1995) is a cross-cultural assessment tool consisting of 26-items extracted from the original WHOQOL-100 questionnaire. The WHOQOL- BREF uses five-point Likert-type scales to measure four main domains of QOL: (1) Physical health, (2) Psychological health, (3) Social relations, and (4) Environment health. The time frame for the assessment is the 2 previous weeks. Higher scores in this questionnaire indicate a better QOL.</p> <p>Kuyken W, Orley J, Power M, Herrman H (1995) The World Health Organization quality of life assessment (WHOQOL): position paper from the World Health Organization. Soc. Sci.Med 41: 1403–1409. http://www.ncbi.nlm.nih.gov/pubmed/8560308</p> |
| World Health Organization Quality of Life-BREF (WHOQOL-BREF) - Taiwan Version | <p>The World Health Organization Quality of Life-BREF (WHOQOL-BREF) instrument includes items on physical health, social relationships, health satisfaction, psychological status, general quality of life measures, and environmental factors.</p> <p>Reference for further details: Yao KP. Development and instruction of the WHOQOL-BREF Taiwanese Version Interview Version. 2nd ed. Taipei, Taiwan: World Health Organization Life Quality Questionnaire Taiwan Version Questionnaire Development Group; 2005.</p> |

Appendix 2: Evidence Tables of Included Studies

Table for Evidence Statements 1.1 to 1.8

| Bartlett 2013 | | | | | |
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| First author and year: | Setting: | Method of allocation: | Mental wellbeing measures: | Wellbeing results | Limitations (author): |
| Bartlett 2013 | 3 intervention programmes targeting socially isolated older adults: | A convenience sampling strategy was used with participants recruited through the community organisations | Loneliness: The de Jong Gierveld Scale (de Jong Gierveld and van Tilburg 1999) Social support: the Duke Social Support Index (DSSI) (Koenig et al. 1993). | There was no significant difference in loneliness scores in the Greenvale and Hervey Bay programmes, although loneliness reduced – Pre Programme Loneliness Scores 2.9 (Std Error E 0.6) and 7.3 (Std Error 0.9) respectively to 2.6 (Std Error E 0.5) and 6.1 (Std Error 0.9) . p=0.64 and p=0.199 respectively. | Inappropriate or inconsistent sampling methods which affects the study validity. Unstandardised intervention content and strategies, so not possible to compare. |
| Country of study: Australia | 1. Programme implemented in a rural setting in Greenvale, Australia 2. Programme implemented in a regional setting in Hervey Bay, Australia 3. Programme (Culturally Appropriate Volunteer Service Programme) implemented in an urban setting in Brisbane, Australia | Intervention(s): 1. A regular fitness programme based on a range of exercises, including a swimming, as well as an arts programme. It focused on building individual and community capacity by providing community transport, and training to enable older people to manage their own activities and seek ongoing funding (e.g. accreditation for volunteer bus drivers, swim coaching, and food handling) plus provision of guest speakers on healthy ageing topics 2. Providing activities including community forums, better integration of services for older people including establishing a shop front contact point, development of an action plan and resource kit, and the implementation of a ‘buddy system’ (connecting a volunteer with a socially isolated older person to help build confidence, encourage engagement in social activities) 3. Developing a culturally appropriate model of volunteer service delivery for seniors (CAVS), | Independence measures: Not applicable | Loneliness did significantly decrease in the CAVS programme from 7.5 (Std Error 0.8) to 5.0 (Std Error 0.7). p=0.001. | Unstandardised data collection; e.g. discrepancies in surveys used. In the CAVS study responses to instruments from participants who did not speak English were completed by staff; they may have expressed their own opinions so CAVS results cannot be attributed to intervention. |
| Aim of study: To evaluate three pilot intervention programmes aiming to build social networks and community capacity through a range of group-based activities, targeting older people at risk of social isolation | Participants: 1. Older adults (age range: 54-93, mean 66), 56 % women 2. Older adults (age range: 42-84, mean 68, 80 % women 3. Older adults (age range: 63-100, mean 79), 65 % women | | Other measures: Basic demographic variables, as well as social contacts outside home | There was no significant difference in social support scores in the Greenvale and Hervey Bay programmes. Pre Programme Social Support Scores 2.6 (Std Error E 0.1) and 1.9 (Std Error 0.1) respectively to 2.7 (Std Error E 0.1) and 2.2 (Std Error 0.1) . p=0.205 and p=0.018 respectively. | Limitations (review team): No control design |
| Study design: Exploratory uncontrolled before and after study | Inclusion: The selection was based on a range of criteria, including older people at higher risk of social isolation and loneliness (because of older than average populations, rural or remote locations, and culturally and linguistically diverse communities) | | Follow-up periods: Evaluations consisted of pre- and post program questionnaires (no duration reported) | Social support did significantly increase in the CAVS programme from 2.4 (Std Error 0.1) to 2.7 (Std Error 0.1). p=0.007 | Evidence gaps: More high-quality research (e.g. avoiding the study limitations listed) needed where community-based interventions are evaluated |
| Quality score: - | Exclusion (reasons listed): | | Method of analysis: Independent and paired samples t-tests | Pre-programme loneliness and social support scores were significantly negatively correlated to | Funding resources: None reported |
| External validity score: - | | | | | Applicable to UK? |

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| | <p>None</p> <p>Motivation/ referral/ payment:</p> <p>Participants recruited through the community organisations involved</p> | <p>focusing on social isolation The project also involved delivering social and leisure activities and library services for older migrants through two ethnic community organisations</p> <p>Control: No control</p> <p>Sample sizes:</p> <p>Assessed for eligibility: Not applicable</p> <p>Randomised: Not applicable</p> <p>Baseline data: 1. N= 42 2. N= 15 3. N= 16</p> <p>Baseline comparisons: No comparisons described</p> <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery: The three programmes were delivered by the following community organisations in Queensland, Australia: Greenvale State School Parents and Citizens Association, Hervey Bay City Council and the Multicultural Development Association</p> <p>Target group:</p> <p>Socially isolated older adults</p> | | <p>a strong degree for Greenvale participants, $r(26)=-0.69$, $p<0.001$, indicating that greater loneliness was strongly correlated with lower social support However, these scores were not significantly correlated in the Hervey Bay programme, $p=0.514$, $N=14$, or the CAVS programme, $p=0.048$, $N=12$ The post-programme loneliness and social support scores were again significantly negatively correlated to a strong degree for Greenvale, $r(28)= -0.75$, $p<0.001$, but there was no significant correlation between these scores for Hervey Bay, $p = 0.406$, $N = 12$, or CAVS, $p=0.035$, $N=12$</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>1. 10/42 (24 %)</p> <p>2. No drop-outs between pre- and post tests</p> <p>3. No drop-outs between pre- and post tests</p> | <p>Yes</p> |
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| Bedding 2008 | | | | | |
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| <p>First author and year:</p> <p>Bedding, 2008</p> <p>Country of study: UK, southern England</p> <p>Aim of study:</p> <p>To explore the effects of art classes for older people.</p> <p>Study design:</p> <p>Exploratory observational pilot study</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>Not applicable</p> | <p>Setting: At a place preferred by participants in southern England</p> <p>Participants: 6 older people aged 65 to 84 and who were retired, healthy and living independently in the community and no longer in paid employment. White British with British origin.</p> <p>Inclusion: community-dwelling retirees who took part in art classes previously.</p> <p>Exclusion (reasons listed): No exclusion criteria applied</p> <p>Motivation/ referral/ payment:</p> <p>Recruited from two acquaintances</p> | <p>Method of allocation:</p> <p>Purposeful, convenient sampling method.</p> <p>Intervention(s):</p> <p>Pilot interviews for older adults who took part in community-based art classes using oil and watercolour-paintings.</p> <p>Control: no control</p> <p>Sample sizes: 6</p> <p>Assessed for eligibility: Not applicable.</p> <p>Randomised: not applicable.</p> <p>Baseline data: not stated</p> <p>Baseline comparisons:</p> <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery: not stated.</p> <p>Target group: community dwelling white British retirees.</p> | <p>Mental wellbeing measures:</p> <p>Phenomenological interviews</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures: Not applicable.</p> <p>Follow-up periods: A 45 minute-interview with each person</p> <p>Method of analysis:</p> <p>Qualitative analyses using unstructured conversational-style interviews and phenomenological methodology.</p> | <p>Wellbeing results:</p> <p>Narrative descriptions on positive experiences of attending art classes. The participants described painting as enjoyable, rewarding, satisfying, fun, relaxing. It brought a sense of achievement and boost their confidence and helped them to manage negative emotions. It also helped to socialize with other people as a social club.</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>All participated in the interviews.</p> | <p>Limitations (author)</p> <p>All of the study participants were White British retirees. Generalisability issues to a more culturally diverse sample.</p> <p>Limitations (review team):</p> <p>No details on duration, intensity, frequency of the actual art classes that the participants took. No before and after comparisons.</p> <p>Evidence gaps:</p> <p>Non-white British sample, ethnically diverse population needed.</p> <p>Funding resources:</p> <p>Not stated.</p> <p>Applicable to UK?</p> <p>Yes</p> |

| Boise et al., 2005 | | | | | |
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| <p>First author and year:</p> <p>Boise 2005</p> <p>Country of study:</p> <p>USA</p> <p>Aim of study:</p> <p>To empowers family caregivers to reduce negative effects of caregiving and to practice self-care.</p> <p>Study design:</p> <p>Uncontrolled before and after study.</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>+</p> | <p>Setting:</p> <p>The program was implemented in the state of Oregon, USA</p> <p>Participants:</p> <p>Family caregivers of older adults (mean age: 61, range 26-89 years); 36% of carers were spousal.</p> <p>Inclusion: Family caregivers, also within rural and ethnic minority communities</p> <p>Exclusion (reasons listed):</p> <p>None</p> <p>Motivation/ referral/ payment:</p> <p>Legacy Caregiver Services widely advertised the availability of class-leader training sessions throughout the state where the programme was implemented</p> <p>Experienced educators, service agency staff, and volunteers were encouraged to apply for the training program</p> | <p>Method of allocation: Not applicable</p> <p>Intervention(s):</p> <p>“Powerful Tools for Caregiving”(PTC): an education programme for family caregivers of older adults. Based on a self-efficacy model, the programme empowers family caregivers to reduce negative effects of caregiving and to practice self-care.</p> <p>2.5 hour sessions, once a week, over a 6-week period. Each week’s class covered a different topic and taught “tools” that provide useful techniques for improving caregivers’ emotions, self-care behaviours, and self- efficacy. Each class also included a different relaxation tool, e.g., guided imagery, deep breathing, or “shoulder lift,” so participants take away from the class a repertoire of relaxation techniques</p> <p>Control:</p> <p>No control</p> <p>Sample sizes: N=359</p> <p>Assessed for eligibility:</p> | <p>Mental wellbeing measures:</p> <p>Emotional Well-being: Four measures were used to assess emotional well-being; The 3-item Positive Feelings about Caregiving Scale (PFCS) was developed for this programme to measure how positively or negatively the caregiver felt about his/her role as a caregiver;</p> <p>Anger was measured using the 4-item Anger/Irritability scale (Pearlin & Mullen,1988); Guilt was measured using a 4-item scale adapted from the Feelings of Not Doing Enough subscale of the Caregiver Guilt Scale (Kingsman, 1992)</p> <p>Depression: 10-item Centre for Epidemiological Study Depression scale (CES-D 10, Andresen et al., 1994).</p> <p>Self-efficacy:</p> <p>Caregiving Self-Efficacy Scale (CgSES) was developed for the programme with specific items related to the skills, behaviours, and attitudes taught during the classes</p> | <p>Wellbeing results</p> <p>Significant positive change (in the desired direction) was reported in all areas of expected outcomes: emotional well-being, self-care behaviours, self-efficacy, and use and knowledge of community services. Significant positive outcomes were sustained at the 6-month follow-up for all outcomes except from pre- class survey and 6-month follow-up in exercise frequency</p> <p>Mean 6 month post intervention scores using the 3-item Positive Feelings about Caregiving Scale (PFCS) increased from 5.13 (SD 2.2) to 6.14 (SD 2.1) $t=-3.42$ $p<0.01$ while anger measured using the 4-item Anger/Irritability scale decreased from 3.51 (SD 2.2) to 2.41 (SD 2.0) $t=3.66$ $p<0.01$. Guilt, measured using the using a 4-item scale adapted from the Feelings of Not Doing Enough subscale of the Caregiver Guilt Scale also decreased from 3.23 (SD 2.5) to 2.52 (SD 2.1) $t=2.44$ $p<0.05$.</p> <p>Independence results</p> <p>Not applicable</p> | <p>Limitations (author):</p> <p>High drop out rate of the intervention. Low response rate of the study Intervention might contain too many sessions. No randomised controlled design.</p> <p>Limitations (review team):</p> <p>No general mental wellbeing measures used</p> <p>Evidence gaps:</p> <p>Further evaluation of the Powerful Tools for Caregiving program in a controlled trial needed</p> <p>Funding resources:</p> <p>The Robert Wood Johnson Foundation, Northwest Health Foundation and Good Samaritan Foundation</p> <p>Applicable to UK?</p> <p>Yes- the PTC has been used in the UK</p> |

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| | | <p>Randomised: Not applicable</p> <p>Baseline data:</p> <p>N=359. 78% women, mean age 61</p> <p>Baseline comparisons: Not applicable</p> <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>Professional and community volunteers were trained as class leaders and master trainers for the programme.</p> <p>Target group:</p> <p>Family caregivers of older adults, also among rural and ethnic minority communities</p> | <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>Self-care behaviour: The use of relaxation techniques and frequency of exercise were measured using single-item questions from Lorig et al. (1996)</p> <p>A Health Self-Care Neglect Scale (HSCN) to measure the caregiver's neglect of health-related self-care behaviours was adapted from Zarit's Health Behaviours Scale (S. Zarit, personal communication, August, 1999)</p> <p>Follow-up periods:</p> <p>Pre-intervention, post-intervention and 6-month follow-up surveys</p> <p>Method of analysis:</p> <p>Outcomes for the courses were analysed using paired t tests to compare the pre-class and post-class measures</p> <p>The t tests were also used to compare the pre-class and 6-month follow-up measures for individuals who completed the class series</p> | <p>Attrition:</p> <p>Of the 359 persons who attended the 33 courses, 257 (72%) completed the series (participants were considered to have completed the series if they attended at least four classes)</p> <p>Of course completers, 226 returned pre-class forms, 204 completed post-class forms</p> <p>A total of 186 class completers submitted both pre-class and post-class evaluation forms (72% response rate for the post class analysis)</p> <p>A 6-month evaluation was mailed to class completers, of whom 69 returned both the preclass and follow-up form (27% response rate for the follow-up analysis)</p> | |
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| Cohen 2006, 2007 | | | | | |
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| <p>First author and year:</p> <p>Cohen 2006</p> <p>Country of study:</p> <p>US</p> <p>Aim of study:</p> <p>To measure the impact of professionally conducted community-based cultural programmes (choral singing) on the physical health, mental health, and social activities of individuals aged 65 and older</p> <p>Study design:</p> <p>Quasi experimental study</p> <p>Quality score:</p> <p>+</p> <p>External validity score:</p> <p>-</p> | <p>Setting:</p> <p>Suburban Washington DC.</p> <p>Participants:</p> <p>The intervention group's mean age was 79.0 years compared to 79.6 years for the comparison group. The intervention group was 78% female, 92% White (non-Hispanic) and 8% minorities. The comparison group was 80% female, 93% White (non-Hispanic), and 7% minorities.</p> <p>Intervention: 90</p> <p>Control: 76</p> <p>Inclusion:</p> <p>English-speaking older adults older than age 64 who were ambulatory and healthy enough to participate regularly in community-based activities.</p> <p>Exclusion (reasons listed):</p> <p>None listed</p> <p>Motivation/ referral/ payment:</p> <p>Not reported</p> | <p>Method of allocation:</p> <p>Not stated</p> <p>Intervention(s):</p> <p>The intervention consisted of participating in a professionally conducted choral group for which there were weekly singing rehearsals for 30 weeks as well as public performances several times during the intervention period.</p> <p>Control:</p> <p>No intervention for control group</p> <p>Sample sizes:</p> <p>Assessed for eligibility:</p> <p>Randomised: Not stated</p> <p>Baseline data:</p> <p>Intervention: 90</p> <p>Control: 76</p> <p>Baseline comparisons:</p> <p>Demographic analysis found no statistically significant differences between the groups. Significant differences between intervention</p> | <p>Mental wellbeing measures:</p> <p>Philadelphia Geriatric Centre Morale Scale (Lawton, 1975; Loneliness Scale-III (Russell, 1996); measurement of engagement in social activities.</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>Baseline measures of physical health and health service use: self-reported general physical health; self-reported assessments of health services utilisation (e.g., doctor visits and medication usage)</p> <p>Follow-up periods:</p> <p>12 Months and 24 months</p> <p>Method of analysis:</p> <p>For measures that showed no group differences direct comparisons made of groups at follow-up using either an independent sample t test or Pearson chi-square. For measures that demonstrated significant differences at baseline, analyses of covariance controlling for baseline assessments. Significance set at</p> | <p>Wellbeing results: Significant difference in morale between the two groups at follow-up, $t(125) = -1.92$; $p < 0.06$. Mean morale scores decreased from 14.15 (SD 2.42) to 14.08 (SD 2.66) in intervention group and from 13.51 (SD 3.07) to 13.06 (SD 3.29) in control group.</p> <p>Both groups saw a slight decrease in loneliness on the loneliness scale: intervention 35.11 to 34.6; comparison 38.26 to 37.02. This difference was marginally significantly greater in the intervention group: ANCOVA marginally significant difference between the two groups, $F(1,126) = 3.08$; $p = 0.08$. Comparison group reported a more significant decrease in level of weekly activity than did the intervention group.</p> <p>The average number of weekly activities for the intervention group went from 5.37 at baseline to 4.29 12 months later. The comparison group reported a decrease from 4.88 to 2.58, $t(140) = -4.62$; $p < 0.01$.</p> <p>Independence results</p> <p>Not applicable</p> | <p>Limitations (author):</p> <p>No random selection and assignment. Sample in both groups was mostly white and female and not diverse enough.</p> <p>Limitations (review team): More specific detail on presence of any chronic</p> <p>Evidence gaps:</p> <p>Funding resources:</p> <p>National Endowment for the Arts (lead sponsor); Centre for Mental Health Services, Substance Abuse and Mental Health Services Administration, Department of Health and Human Services; National Institute of Mental Health, National Institutes of Health; National Retired Teachers Association/AARP; International Foundation for Music Research; Stella and Charles Guttman Foundation, New York City</p> |

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| | | <p>and comparison group for depression scale scores, loneliness scale scores, and other health problems – with comparison group having worse values.</p> <p>Study power:</p> <p>Not calculated</p> <p>Intervention delivery:</p> <p>The intervention included weekly singing rehearsals for 30 weeks as well as public performances several times during the intervention period.</p> <p>Target group:</p> <p>Community dwelling older people</p> | <p>P<0.10.</p> | <p>Attrition:</p> <p>Attrition rates:</p> <p>Intervention : 13/90=14%</p> <p>Control: 12/76=16%</p> | |
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| Collins et al 2006 | | | | | |
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| First author and year: Collins et al 2006 | Setting: Largely older persons day centres and older person housing villages at 20 sites in rural and urban communities of Clark County, Nevada | Method of allocation: Not applicable | Mental wellbeing measures: The Mastery Scale (Hayslip B, Maloy R, Kohl R 1995). Revised UCLA Loneliness Scale (four item scale) | Wellbeing results Pre test to post test comparisons showed significant improvements on all outcome measures. Mastery increased from a mean score of 24.96 +/- 0.28 to 27.01 +/-0 .25 (t= 12.08, df = 323, p <0 .001). Loneliness decreased from a mean score of 8.64+/-0 .10 to 7.86 +/-0.09 (t =29.20, df = 329, p <0..001) | Limitations (author): Sample population self selected and included only those who completed both the pretest and the posttest. Therefore, it is not representative of all older adults. Evaluation design lacked a control group, assessed only short-term improvements, and did not account for the potential effect of the pretest itself. Data were self-reported and may be limited by the participants' desire to represent themselves in a manner they deem to be more socially desirable. Poor internal consistency for loneliness scores |
| Country of study: USA | Participants: 339 people ages of 52 and 93 years (mean=73.20, SD 8.64). 80% female; 68% white. | Intervention(s): 16 week course (2hrs per session) taught by cooperative extension paraprofessionals, volunteer peer educators, and on-site staff. It includes 15 lessons on topics including nutrition and food; personal safety, such as reducing accidents in the home; financial strategies to manage limited resources; general wellness, such as immunisation and hand washing; and productive ageing. | Independence measures: None stated | Independence results Attrition: Stated to be less than 5% | Limitations (review team): Lack of information on health state of participants. No information on the volunteer peer participants |
| Aim of study: To evaluate the effectiveness of the Seniors CAN educational intervention, a 16-week educational health promotion intervention | The ethnic affiliations of other participants included Latino (14%), African-American (10%), Asian American (6%), and Native American (2%). 10% taught in Spanish. Inclusion: Not stated Exclusion (reasons listed): Motivation/ referral/ payment: Not stated | Control: None Sample sizes: Assessed for eligibility: Not stated Baseline data: See participants Study power: No Intervention delivery: delivered in classroom setting over 16 weeks, 2 hrs per session Target group: Retired community dwelling older people | Other measures: Perceived Stress Scale (PSS-10). Pearlman LI, Schooler C (1980) Follow-up periods: At the end of last class (4 month course duration) Method of analysis: Participants' scores on mastery, loneliness and stress from pretest and post test were compared using paired t-tests. To assess the relative effectiveness according to participants' sociodemographic characteristics, score differences from pretest to posttest (i.e., improvement scores) were then computed and group means were examined using a three-way ANOVA. | Evidence gaps: Longer term follow up period; understanding more about relevant role of volunteer peer educators in delivery of intervention Funding resources: Not stated Applicable to UK? Yes there are similar schemes being evaluated, except that they are delivered by health care professionals and occupational therapists and fall out of scope as result. | |
| Study design: Uncontrolled before and after study | None stated | | | | |
| Quality score: - | | | | | |
| External validity score: - | | | | | |

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| Coulton et al 2015 | | | | | |
| <p>First author and year: Coulton 2015</p> <p>Country of study: UK</p> <p>Aim of study: To assess effectiveness and cost effectiveness of active engagement in community singing on measures of mental and physical health-related quality of life, depression and anxiety for older people.</p> <p>Study design: Pilot RCT</p> <p>Quality score: ++</p> <p>External validity score: +</p> | <p>Setting: 5 localities in east Kent. Various community venues such as Age UK centres used. In general for Silver Song Clubs the objective is to have a venue that provides space for the Song Club circle with clear vision of the lead facilitator and alternative accommodation for individuals who do not want to take part.</p> <p>Participants: 258 community dwelling people over the age of 60. Overall mean age of the population was 69.2 (s.d. 7.14). 81% female in intervention and 87% female in control group. 25% were still in employment and 98% were white. 63% had been in education after age 16.</p> <p>Inclusion: All people over the age of 60</p> <p>Exclusion (reasons listed): Older people unable to provide informed consent.</p> <p>Motivation/ referral/ payment: No specific motivation stated – individuals were recruited through multiple methods: study widely publicized in five local areas in Kent. Researchers also attended day</p> | <p>Method of allocation: Independently determined using random permuted blocks of variable length, stratified by centre and gender.</p> <p>Intervention(s): Participation in Silver Song Clubs – musician led community group singing programmes. Groups met for 90 minutes for 14 weeks to sing songs from different eras and in different styles.</p> <p>Control: Continuing on with usual activities.</p> <p>Sample sizes:</p> <p>Assessed for eligibility: 393 of which 258 were eligible and consented to participate.</p> <p>Randomised: 127 (49%) control group and 131 (51%) intervention group.</p> <p>Baseline data: Mean age in intervention and control groups was 69.2 and 69.5 respectively. 81% female in intervention and 87% female in control group. 99.2% of intervention and 96.8% of controls were white. 16% of intervention group were employed and 9% of control group. 9.2% of intervention and 6.8% of controls had</p> | <p>Mental wellbeing measures: Mental health component of SF12</p> <p>Independence measures: Not applicable</p> <p>Other measures:</p> <p>Cost per QALY</p> <p>Follow-up periods: 3 and 6 months</p> <p>Method of analysis: Intention to-Trea. The SF12 mental components at 6 months was analysed by analysis of covariance adjusting for baseline age and gender. As intervention involved groups, the analysis was adjusted using the Huber-White sandwich estimation technique to generate robust standard errors. Secondary outcomes were analysed in a similar manner</p> | <p>Wellbeing results</p> <p>There was a significant improvement in mean SF-12 mental health component scores for the intervention at 6 months compared to the control group. Mean difference 2.35 (0.06 - 4.76) P=0.05. In the intervention group scores improved from 48.8 (46.8 – 50.8) CI to 52.3 (50.7 – 54.0) compared with 50.0 (47.9 – 52.2) to 49.9 (48.2 – 51.7) in the control group. The 3 month mean difference was greater: 4.77 (2.53 – 7.01) p<0.01.</p> <p>In economic analysis noted that intervention would have 60% chance of being cost effective with cost per QALY gained threshold of £20000.</p> <p>Independence results:</p> <p>Not applicable</p> <p>Attrition:</p> <p>3 Months: Intervention 18/131 (14%), Control 18/127 (14%)</p> <p>Six Months: Intervention 26/131 (20%); control 28/131 (21%)</p> | <p>Limitations (author): Predominantly white population in one geographical area so not clear if results can be generalised. Short intervention period – potentially greater effect if longer duration. No process evaluation. Benefits may be due to group interaction rather than to singing per se – this needs to be tested. Population was self-selecting population of people who wanted to engage in singing groups.</p> <p>Limitations (review team): Intervention delivered mainly to women with no BME participation.</p> <p>Evidence gaps: Looking at benefits of singing interventions for different population group and comparing singing with other group based activities.</p> <p>Funding resources: National Institute for Health Research under the Research for Patient Benefit Programme.</p> <p>Applicable to UK? Yes, implemented in UK context</p> |

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| | <p>centres and other venues where older people met for group activities to provide information on the study. In addition, advertisements were placed in the local media, general practices and community venues.</p> | <p>depression.</p> <p>Baseline comparisons: No statistical significant differences in baseline demographics or clinical characteristics.</p> <p>Study power: To detect an effect size of 0.5 at power of 80% (two-tailed test, alpha of 0.05) and power required 63 participants in each arm of the trial.</p> <p>Intervention delivery: Delivered by Silver Song Clubs (Big Lottery Funded) in community venues</p> <p>Target group: People over the age of 60.</p> | | | |
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| Creech et al., 2013 (also reported in Hallam et al., 2014) | | | | | |
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| <p>First author and year: Creech et al 2013 and Hallam 2014</p> <p>Country of study: UK</p> <p>Aim of study: To explore how participation in making music might support the social, emotional and cognitive well-being of older people</p> <p>Study design: Quasi-experimental study applying mixed method approaches (quantitative data reported here as within scope of the review)</p> <p>Quality score: +</p> <p>External validity score: -</p> | <p>Setting: 3 sites in the London area where older people engaged with musical activity, as well as comparison settings where non-musical activities were provided</p> <p>Participants: Community-dwelling older adults participating in the provided activities (81% female); the oldest participant was 93 and the youngest 50</p> <p>Inclusion: Community-dwelling older adults residing in the study region</p> <p>Exclusion (reasons listed): Not listed</p> <p>Motivation/ referral/ payment: Participants were recruited through the organisations providing the activities</p> | <p>Method of allocation: Not applicable</p> <p>Intervention(s): 1. The Silver Programme at the Sage Gateshead, provided a wide range of musical opportunities for people over the age of 50 including singing, the playing of steel pans, guitars, ukulele, recorder and activities involving folk ensemble, music theory and samba. Participants had the opportunity to perform regularly in public concerts 2. The Connect Programme of the Guildhall School of Music and Drama, community projects with people of all ages The project's focus was on activities where participants created and performed music together, linking storytelling and reminiscing to creative music making The musical activities with older people took place in the community rooms of sheltered housing accommodation in East London The activities included intergenerational music sessions involving older people making music with children from local primary schools 3. Westminster Adult Education Service (WAES) music department, a wide range of musical programmes in a range of musical genres, specialising in singing, playing instruments, sound engineering and using sequencers, music theory and composing</p> <p>Control:</p> | <p>Mental wellbeing measures: Quality of life: CASP-12 Psychological wellbeing: Basic Psychological Needs Test</p> <p>Independence measures: Not applicable</p> <p>Other measures: Socio-demographic variables Information about their previous musical experiences</p> <p>Follow-up periods: Measurements pre and post intervention (9-month time period)</p> <p>Method of analysis: Factor analysis of the data retrieved from questionnaires The individual elements of the Basic Needs Satisfaction Scale were summed into their subcomponents (control, autonomy and relatedness) and comparisons using an independent t-test were made between those participating in the music and non-musical groups Also comparisons between time points were made using t-tests</p> | <p>Wellbeing results Factor analysis looking at the scores on CASP and Psychological Needs Test revealed three factors: purpose (having a positive outlook on life); autonomy and control; and social affirmation (positive social relationships, competence and a sense of recognised accomplishment).</p> <p>There were statistically significant differences between the groups on three factors: sense of purpose (effect size 0.19) $p < 0.0001$ control/autonomy (0.15) $p < 0.001$ and social affirmation (0.11) $p < 0.05$. In all cases the scores of those participating in the music groups were better indicating more positive responses.</p> <p>Independence results Not applicable</p> <p>Attrition: Overall, 398 responses (80%) were received from those participating in musical groups and 102 (20%) from those in the other groups</p> | <p>Limitations (author): Sample not based on a randomised sample but members of self-selecting musical groups who may already have had higher self-assessed wellbeing High attrition rate between the first and second presentations of the questionnaire The comparisons between the participants in the third and fourth ages were between different members of the music groups when the analysis should have been based on longitudinal data</p> <p>Limitations (review team): Self-reported measurements on mental wellbeing outcomes Study design meant that it was not possible to collect baseline data obtained – just data after participation in intervention</p> <p>Evidence gaps: More research needed on the mechanisms of activity choices – e.g. those selecting music as an activity of choice in later life may do so based on previous experiences with music</p> <p>Funding resources: This research was part of the New Dynamics of Aging programme, which was funded across the five UK research councils: AHRC, BBSRC, EPSRC, ESRC, MRC. Grant Reference no. RES-356-25-0015</p> |

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| | | <p>A comparison group comprised older adults involved in a range of activities which involved attending classes other than music, including individuals attending language classes (four groups); art/craft classes (five groups); yoga; social support (two groups) and a book group and a social club</p> <p>Sample sizes:</p> <p>Assessed for eligibility:</p> <p>Questionnaires were distributed to 500 older people participating in the activities at the baseline and follow-up measurements of the intervention study</p> <p>Randomised: Not applicable</p> <p>Baseline data:</p> <p>N= 337 (intervention groups) N=89 (comparison group)</p> <p>Baseline comparisons: Not applicable</p> <p>Study power: Not powered to achieve statistical significance</p> <p>Intervention delivery: The activities were included in community projects provided by the organisations mentioned above</p> <p>Target group: Older adults (50 or over) who participated in community based activities in the London area</p> | | | <p>Applicable to UK? Yes, implemented in UK context</p> |
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| Davidson, 2013 | | | | | |
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| First author and year: | Setting: Community venues | Method of allocation: | Mental wellbeing measures: | Wellbeing results | Limitations (author): |
| Davidson, 2013 | Participants: | Not applicable | UCLA Loneliness Scale Version 3 | There were no statistically significant differences between the Silver Chain group and the community group on the UCLA scores. | Short follow-up period, small sample size. |
| Country of study: Australia | Older adults aged 70 and over. | Intervention(s): | SF-36: mental health | | Limitations (review team): |
| Aim of study: | The Silver Chain group (mean 79, SD 4.2) | Eight consecutive weekly singing sessions led by an experienced community musician at a local community centre. Each session started with vocal and physical warm-ups and singing songs popular in Australia over the last 60 years. | Independence measures: | | No control design |
| To evaluate the effect of a singing programme developed for older people on health and well-being. | The community group (mean 76, SD 5.2 years) | Control: | Not applicable. | For the 16 participants recruited through a community newspaper advertisement there were no significant differences in SF-36 Mental Health component scores reported pre and post intervention: 86.3 (SD=11.4) and 82.0 (SD=15.1). | The figures on the positive experience could have been reported separately in the two groups rather than for the entire participants. |
| Study design: | Living in Perth, receiving home help services without a diagnosis of dementia. | Sample sizes: | Other measures: | For the 13 participants from Silver Chain SF-36 Mental Health component scores reported pre and post intervention were : 77.7 (SD 13.5)and 73.0 (21.2) in Silver Chain group | Evidence gaps: |
| Uncontrolled before and after study | Inclusion: | 36 were recruited. | SF-36: physical functioning, role physical, bodily pain, general health, vitality, SF-36: Social functioning, and musical outcomes. | More studies are needed to confirm the potential benefits of the social components of the singing programme. | |
| Quality score: | People living independently, although those accessing Silver Chain were recipients of home help. | Assessed for eligibility: | The Geriatric Depression Scale (GDS) | | |
| - | Exclusion (reasons listed): | Not applicable | Follow-up periods: | | |
| External validity score: | None | Randomised: | 8 weeks | Vitality scores on the SF-36 fell significantly in the community group from 72.5 (SD = 11.0) to 62.1 (SD=17.3) p=0.03 | Funding resources: |
| - | Motivation/ referral/ payment: | Not applicable | Method of analysis: | In the qualitative study interviews showed most participants found the experience positive during and after the intervention. 68% frequently felt improved sense of well-being during after the intervention. 77% of the participants reported gained self-confidence in performing. | Silver Chain, the University of Western Australia and the City of Stirling. |
| | Older people were recruited from two: Home care clients of Silver Chain, a large health and aged care service provider in Western Australia. | Baseline data: | The t-test was performed, alongside interview-based qualitative analyses | | Applicable to UK? |
| | | N=17 from Silver Chain | | | Yes |
| | | N= 19 from advertisement | | | |
| | | Baseline comparisons: | | | |
| | | The Silver Chain group was significantly older than the community group (p<0.05). | | | |
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| | | <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>The singing sessions were led by an experienced community musician at a local community centre.</p> <p>Silver Chain provided volunteer drivers for those unable to provide their own transport.</p> <p>The participants were paid by the researchers (but the exact amount of money not mentioned).</p> <p>Target group:</p> <p>Silver Chain clients were in receipt of some home help services but living independently.</p> | | <p>Not applicable</p> <p>Attrition:</p> <p>Participants: 7/36 (29 withdrew: 19%).</p> | |
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| <p>First author and year: de Medeiros 2011</p> <p>Country of study: US</p> <p>Aim of study: To assess the effectiveness of a structured autobiographical writing workshop on autobiographical memory (AM), mood and self-concept in older adults.</p> <p>Study design: RCT</p> <p>Quality score: +</p> <p>External validity score: +</p> | <p>Setting: Retirement communities in Maryland.</p> <p>Participants: Older adults (67–96 years); 20 men and 31 women.</p> <p>Inclusion: Age 65 years or older, high-school diploma or higher education, no symptoms of dementia, score of 25 or above on the Mini-Mental State Exam, normal vision and hearing (with or without correction), competent in the English language, with an interest in writing, physical ability to write (by hand or keyboard), no formal memory training within the past year, and willingness take part in the 34-week study.</p> <p>Exclusion (reasons listed): Due to poor health and difficulties with arranging the sessions, five initially recruited participants did not complete all testing at three occasions.</p> <p>Motivation/ referral/ payment: Participants recruited via flyer from two retirement communities in Maryland</p> | <p>Method of allocation: Participants were randomly allocated</p> <p>Intervention(s): Writing workshop intervention to improve autobiographical memory and well-being in older adults</p> <p>Control: Two control groups: active control group and a no-treatment control group.</p> <p>Sample sizes: 51 older adults: 18 in writing workshop group(AWW), 18 oral reminiscence group (REM) and 15 no intervention group (CTL)</p> <p>Assessed for eligibility: Assessed for eligibility through a phone interview</p> <p>Randomised: Participants were assigned randomly to one of three groups: autobiographical writing workshop, a reminiscence group (active control condition) or a no-treatment control group.</p> <p>Baseline data: Mini-Mental State Exam (MMSE); Autobiographical memory; New</p> | <p>Mental wellbeing measures: Mini-Mental State Exam (MMSE) Mood, personality, self-concept and quality of life: - Geriatric Depression Scale-short form (GDS) - NEO Five Factor Inventory (NEO-FFI) - Tennessee Self-Concept Scale (TSCS) -Short Form-36 (SF-36)</p> <p>Independence measures:</p> <p>Other measures: Autobiographical memory (Autobiographical Memory Interview (AMI) and Remote Word Association Task (RMWAT)) New episodic learning ((Hopkins Verbal Learning Test—Revised (HVLt-R) and Brief Visuospatial Memory Test-Revised (BvMT-R))</p> <p>Follow-up periods: 8 and 34 weeks after baseline testing</p> <p>Method of analysis: ANOVA</p> | <p>Wellbeing results Changes were examined in three areas: (i) autobiographical memory; (ii) new episodic memory and (iii) mood, self-concept and quality of life. No significant main effects or interactions on the GDS. Even though the results for SF-36 showed no significant effect of group or a group X time interaction for the emotional well-being section of the SF-36, there was however a significant effect of time [F(1.75, 84.13)=3.48, p=0.4]. The findings indicated that self-ratings of overall well-being decreased over time across groups. There was a significant effect of time for conscientiousness [F(2, 96)=4.51, p=0.01] with all groups obtaining higher scores. For self-concept, again a significant effect of time was found [F(2,96)=8.3, p<0.001], with an improved self-concept over time reported by all groups. A significant effect by time [F(2, 96)=3.68, p=0.03] was found on energy/fatigue, with all groups reporting decreased energy. There was also a significant group X time interaction on pain [F(4,96)=2.58, p=0.04]. Compared to the baseline scores, participants in the writing workshop (AWW) reported</p> | <p>Limitations (author): Possible limitations with using the AMI and RMWAT instruments. They are usually used to assess patients with memory impairment and it is possible that the participants were tired of repeating the same stories three or more times and therefore shortened their versions or reduced the level of details included.</p> <p>Limitations (review team): Small sample size</p> <p>Evidence gaps: Not reported</p> <p>Funding resources: Funded by the Brookdale Foundation grant #3101-F08</p> <p>Applicable to UK? Yes</p> |
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| | | <p>episodic learning; Mood, personality, self-concept and quality of life.</p> <p>Baseline comparisons:</p> <p>Baseline data was compared to the study tests at 8 and 34 weeks</p> <p>Study power:</p> <p>Not reported</p> <p>Intervention delivery:</p> <p>After completing baseline assessment, participants were assigned randomly to a writing workshop intervention (AWW), an active control condition (oral reminiscence group, REM), or to a no treatment control condition (CTL). The AWW workshops and REM groups met for 90 min, once a week. The same facilitator led the AWW and REM groups and was blinded to participants' test scores.</p> <p>The follow-up testing was carried out after 8 and 34 weeks.</p> <p>Each week, as part of the Autobiographical writing workshop (AWW), participants were introduced to a literary genre (memoir, letter, poem, third-person story) in which to write about their past.</p> <p>Oral reminiscence group (the REM group) was focused on specific chronological periods: childhood (birth to 12 years); adolescence (age 12–19); younger adulthood (age 20–29); adulthood (age 30–39); middle adulthood (age 40–64); and older adulthood (age 65 to present). Topics for each period were decided</p> | <p>Mixed model ANOVAs</p> | <p>increased pain at 8 and 34 weeks.</p> <p>Other measures:</p> <p>No significant group differences at the baseline on any of the six AMI variables. A significant difference was found for the mean detail score of the RMWAT [F(2,53)=3.2, p=0.05] the REM group had a slightly higher score, indicating more details (M=1.8, SD=0.40) than both the AWW group (M=1.6, SD=0.40) and the CTL group (M=1.6, SD=0.44).</p> <p>Across groups, participants reported more semantic memories from the recent past (late adulthood) than from previous periods of their lives [F (1, 50)=13.54, p=0.001].</p> <p>On the RMWAT, a significant effect of time for mean detail [F(2,45)=8.4, p<0.001] was found. Across groups, amount of detail in memories reported decreased over time. A significant effect of time was also found on the number of pleasant memories reported (F(1.45, 66.7)=25.6, p<0.001). Across groups, the number of 'pleasant' memories increased from the baseline to 8 weeks, and stayed high at 34 weeks.</p> <p>Independence results</p> <p>Attrition:</p> <p>8.9% (5 out of 56 participants were not able to take part in the study)</p> | |
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| | | <p>by group consensus (e.g. childhood games, going to college, etc.).</p> <p>Participants in the no treatment control group were given the opportunity to take part in either a writing workshop or reminiscence group at the end of the study.</p> <p>Target group:</p> <p>Older people</p> | | | |
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| Dickens, 2011 | | | | | |
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| <p>First author and year:</p> <p>Dickens, 2011</p> <p>Country of study: UK</p> <p>Aim of study:</p> <p>To examine the effects of a community-based mentoring service for improving health, social engagement and physical health for socially isolated older people.</p> <p>Study design:</p> <p>Non-randomised controlled trial design</p> <p>Quality score:</p> <p>+</p> <p>External validity score:</p> <p>-</p> | <p>Setting:</p> <p>Devon, Community settings</p> <p>Participants:</p> <p>Community-dwelling older adults</p> <p>Inclusion:</p> <p>Being 50 years of age and over, being socially isolated or at risk of becoming socially isolated, being able to provide informed consent, and being able to complete questionnaire with or without assistance.</p> <p>Exclusion (reasons listed):</p> <p>People with dementia, psychosis or alcohol dependency or living in a nursing home. People with a terminal illness or classified as temporary residents.</p> <p>Motivation/ referral/ payment:</p> <p>Participants identified from a population of individuals who were currently receiving mentoring (intervention) or those receiving usual care via routinely available health, social and voluntary care services (control)</p> | <p>Method of allocation: Not applicable.</p> <p>Intervention(s): The Devon community mentoring model intervention included training mentors to facilitate older people's participation in individually tailored creative and social activities with mentors reducing the level of support over time as appropriate.</p> <p>Control: Matched controlled group</p> <p>Sample sizes: Not randomised. Matched control. Pairs matched using mental health status and social activity scores.</p> <p>Baseline data: N= 200 (intervention); 69% female N= 195 (control). Mean age 71.8 intervention; 69.8 control;</p> <p>Baseline comparisons: Ccontrol group had significantly better levels of mental, physical, and social health, relative to intervention group.</p> <p>Study power: Minimum of 140 participants per group were required (two-sided alpha=0.05, 85% power).</p> <p>Intervention delivery: Community: mentoring delivered by two main voluntary organisations, through operational clusters across Devon.</p> <p>Target group: Older people being socially isolated or at risk of being socially isolated.</p> | <p>Mental wellbeing measures:</p> <p>SF-12 mental health component score (MCS)</p> <p>Social Health including social activities (four items from the RAND Social Health Battery), social support (six items from the Medical Outcomes Study Social Support Survey (MOS-6).</p> <p>Independence measures:</p> <p>None</p> <p>Other measures:</p> <p>Sf-12 physical health component score (PCS), Geriatric Depression Scale (SDS-10), EuroQol EQ-5D).</p> <p>Follow-up periods:</p> <p>6 months</p> <p>Method of analysis:</p> <p>Imputed analyses, statistical analysis for matching.</p> | <p>Wellbeing results</p> <p>At six months there were no significant difference between groups in SF-12 MCS scores (mean between group different 0.8 (S.D: 1.5 to 3.2) p=0.48).</p> <p>There was no significant between group differences in social support mean scores on the MOS-6 (mean score 0.03 S.D: (-0.2 to 0.2) p=0.75). There were no significant differences in social activities except for 'getting along with others' which was significantly deteriorated in the intervention group (Odds Ratio 0.6 Inter Quartile Range (0.4 to 0.9) p<0.01).</p> <p>No significant differences were found in number of other social activities such as no. of friends/family, no. Clubs/groups, get together with friends/family.</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition: 37/395 (9 %)</p> | <p>Limitations (author):</p> <p>The study participants may not be representative of the broader pool of mentoring clients, therefore generalizability issues to more socially isolated older adults.</p> <p>Matched controlled study design can be more susceptible to bias than randomised design.</p> <p>Different matching criteria could have used.</p> <p>Imbalances were evident at baseline.</p> <p>Limitations (review team): Many clients actually had mental and physical health problems so analysis did not focus just on healthy older people.</p> <p>Evidence gaps:</p> <p>None reported</p> <p>Funding resources:</p> <p>Devon County Council in partnership with NHS Devon with funding from the Department of Work and Pensions and the Department of Health.</p> <p>Applicable to UK?</p> <p>Yes</p> |

Author: Ducharme et al 2011 and 2012

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| <p>First author and year:</p> <p>Ducharme 2011 and Durcharme 2012</p> <p>Country of study:</p> <p>Canada</p> <p>Aim of studies: To evaluate the effectiveness of the psychoeducational intervention targeted at family carers of people newly diagnosed with dementia.</p> <p>Study design:</p> <p>Randomised controlled trials</p> <p>Quality score: +</p> <p>External validity score: +</p> | <p>Setting: 2 urban areas of Quebec province, Canada</p> <p>Participants: See sample size</p> <p>Inclusion: Participants had to be the caregiver (spouse or offspring) self-defined as the one principally responsible (notion of primary caregiver) for a relative 65 years of age or older diagnosed with Alzheimer disease in the past 9 months.</p> <p>Exclusion (reasons listed): Caregivers receiving psychotherapy or participating in a support group at time of study</p> <p>Motivation/ referral/ payment: Caregivers were recruited by a designated professional in each memory clinic.</p> | <p>Method of allocation: Not stated</p> <p>Intervention(s): Psychoeducational programme that focuses on the acquisition of skills to help caregivers adapt to their new role. There are seven sessions or modules covering the following topics: caregiver perceptions of the care situation; coping strategies for dealing with difficulties and averting psychological distress; how to communicate and enjoy time spent with the relative suffering from dementia; how to use one's strengths and experiences to take care of the relative; how to get family and friends to help; knowledge of services and how to ask for them; and planning ahead for the future.</p> <p>The programme consists of 90-min individual sessions once a week for 7 weeks. Manualised programme with workbooks for a group leader and caregivers. Minimal training of 3 days needed to deliver course.</p> <p>Control: Usual care : putting caregivers in contact with local community service centres and to offer a range of available services, including those of the Alzheimer Society.</p> | <p>Mental wellbeing measures:</p> <p>For both studies: Informal Social Support.- frequency of support received by caregivers from family (excluding the ill relative), friends, and neighbours, using the 27-item Inventory of Socially Supportive Behaviours (Krause & Markides, 1990). The instrument covers emotional support (e.g., expressing interest in caregiver), informational support (e.g., indicating a person to see in order to obtain help), and instrumental support (e.g., providing caregiver with transportation)</p> <p>Independence measures: None</p> <p>Other measures: Revised Scale for Caregiving Self-Efficacy (Steffen, McKibbin, Zeiss, Gallagher-Thompson, & Bandura, 2002) to evaluate caregiver capacity in relation to the caregiving role. The Family Caregiver Conflict scale. The Carers' Assessment of Managing Index. Planning for Future Care Needs scale. 8-item Preparedness for Caregiving scale (Archbold, Stewart, Greenlick, & Harvath, 1990)</p> <p>Self-efficacy scale (Kuhn & Fulton, 2004), which comprises 15 items on which caregivers rate their level of confidence in dealing with</p> | <p>Wellbeing results: No significant impact on informal support received or family conflicts for either the 2011 study at 3 months after the programme or 6 months after programme in the 2012 study.</p> <p>Other outcomes:</p> <p>Note: more confident in dealing with caregiving situations, better prepared to provide care and more effective in their caregiver role, were better able to plan for the future care needs of their relative,</p> <p>Attrition: For 2011 study: Intervention group: 2/62= 3%</p> <p>Control: 8/49=16%</p> <p>For 2012 study: Intervention group: 19/80 = 24%</p> <p>Control group: 17/53= 32%.</p> | <p>Limitations (author): Concerning informal support, it may be that family and friends are at a loss as to the type of support to offer given that they rarely have prior experience of what the caregivers are going through or that they do not know enough about Alzheimer disease to help.</p> <p>Focused exclusively on caregivers who had been informed of the diagnosis by geriatricians or neurologists working in memory clinics. Role transition in this particular situation might differ for caregivers who are not dealing with such specialised care.</p> <p>Limitations (review team):</p> <p>Very little focus on the mental wellbeing of carers; this was only one small part of the study outcome measures.</p> <p>Evidence gaps:</p> <p>Funding resources: Alzheimer Society of Canada, Canadian Institutes of Health Research and the Canadian Nurses Foundation</p> <p>Applicable to UK?</p> <p>Potentially yes</p> |
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| | | <p>Sample sizes: For the 2011 study 111 caregivers. 62 in intervention group and 49 in controls. Mean age of carers 60.37 (SD 13.12) and 36% were spousal carers (26% women and 10% men)</p> <p>For the 2012 study 133 caregivers participated 80m in intervention group and 53 in control group and 36% were spousal carers (26% women and 10% men)</p> <p>Assessed for eligibility: Not stated</p> <p>Baseline data:</p> <p>Tested for differences</p> <p>Study power:</p> <p>Yes for 2012 study - Sample size enabled detection of a large program effect with statistical power of 80% and an alpha error of 5%, taking into account a correlation coefficient of 0.5 between measurement times</p> <p>Intervention delivery: delivered in classroom setting over 16 weeks, 2 hrs per session</p> <p>Target group: Carers of people newly diagnosed with Alzheimer's Disease</p> | <p>caregiving situations</p> <p>Follow-up periods: end of programme and 3 months later for 2011 study and 6 months for 2012 study</p> <p>Method of analysis: The research hypotheses regarding the efficacy of the intervention program were tested through repeated-measures analyses of covariance (ANCOVA).</p> | | |
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| Eyigor et al 2009 | | | | | |
| <p>First author and year:</p> <p>Eyigor et al 2009</p> <p>Country of study:</p> <p>Turkey</p> <p>Aim of study:</p> <p>To examine the impacts of Turkish folklore dance on the physical performance, balance, depression and quality of life in older women.</p> <p>Study design:</p> <p>Randomised controlled study</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>-</p> | <p>Setting: at a rehabilitation unit</p> <p>Participants: 40 older adult healthy volunteers aged 65 and over.</p> <p>Inclusion: physically active and able to perform activities of daily living independently. No one had any experience in strength or regular exercise training.</p> <p>Exclusion (reasons listed): Neurological impairment (stroke, Parkinson's disease, paresis), severe cardiovascular disease, unstable chronic or terminal illness (diabetes, cancers), major depression, severe cognitive impairment or severe musculo-skeletal impairment (inability to participate in the trainings)</p> <p>Motivation/ referral/ payment: Volunteers were recruited among those who responded to advertisements in outpatient clinics.</p> | <p>Method of allocation: Not stated</p> <p>Intervention(s): Turkish folklore dance lasted 1 hour three times per week at the rehabilitation unit under the supervision of a senior folklore dance expert.</p> <p>Control: Those in the control group did not have any exercise.</p> <p>Sample sizes: 40</p> <p>Assessed for eligibility: yes</p> <p>Randomised: yes</p> <p>Baseline data: mental health on the SF-36 scores, 69.3 ±25.1</p> <p>Baseline comparisons: No differences found.</p> <p>Study power: Not powered to achieve statistical significance</p> <p>Intervention delivery: Dance teacher decided whether the movements were suitable for older people and simplified. The dance sessions consisted of three sections including a 10min warm-up, 40 min of special folklore dance, and 10 min of stretching and cooling-down activities.</p> <p>Target group: healthy older women</p> | <p>Mental wellbeing measures:</p> <p>The Medical Outcomes Study (MOS) 36-item short form healthy survey (SF-36)</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>20-m walk test, a 6-min walk test. Stair climbing, chair rise time, Berg balance scale, geriatric depression scale questionnaires.</p> <p>Follow-up periods:</p> <p>8 weeks</p> <p>Method of analysis:</p> <p>The paired t-test with a significance level (p<0.05).</p> | <p>Wellbeing results:</p> <p>In the dance group, there was a significant improvement in mental health measured in SF-36 at post-test. (81.0 ±18.2, p<0.05). However, no significant differences were found in vitality, social functioning, and emotional role in the intervention and control groups at follow-up assessments.</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>37 out of 40 completed the study. 7.5 % dropped out</p> | <p>Limitations (author)</p> <p>Small sample, short-term follow-up</p> <p>Limitations (review team):</p> <p>Larger sample with longer duration needed. Transferability of the Turkish folklore dance movements to other ethnic groups.</p> <p>Evidence gaps:</p> <p>More diverse styles of ethnic dances</p> <p>Funding resources:</p> <p>Not stated</p> <p>Applicable to UK?</p> <p>Yes</p> |

| Greaves 2006 | | | | | |
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| First author and year: Greaves 2006 | Setting: Community intervention delivered in Mid Devon Primary Care Trust area, UK | Method of allocation: Not applicable | Mental wellbeing measures: Quality of life: SF 12 Social support: Medical Outcomes Social Support Scale | Wellbeing results At 6 months, there were significant improvements in SF12 mental component (MD = 3.02, 95%CI: 1.01 to 5.04, p < 0.005). There was no significant improvement in MOSS (social support) mean scores 1.98 (1.11 s.d.) to 2.04 (1.03 s.d). | Limitations (author): No control High attrition rates |
| Country of study: UK | Participants: Community-dwelling older adults (some with mobility or physical health problems) 76% were female, mean age was 77 (range: 52 to 96) | Intervention(s): The Upstream Healthy Living Centre, a community-based intervention. Trained mentors work closely with participants, aiming to re-kindle their interest in life by engaging in participant-determined programmes of creative, exercise and/or cultural activities, with an emphasis on social interaction. Activity-based interventions are provided, with visits from mentors initially on a weekly basis, and regular telephone contact, which is gradually diminished as participants become more confident | Independence measures: Not applicable | Other measures: Depression: Geriatric Depression Scale (GDS, Yesavage ,1983) Reach and output of the intervention (qualitatively assessed) | Limitations (review team): Self-reported measurements on mental wellbeing |
| Aim of study: To evaluate a complex intervention for addressing social isolation in older people, including promoting active social contact, encouraging creativity and mentoring among the participants | Inclusion: Community residents (50+) | Control: No control | Other measures: Depression: Geriatric Depression Scale (GDS, Yesavage ,1983) Reach and output of the intervention (qualitatively assessed) | Wellbeing results At 12 months, there were significant improvements in social support mean scores 1.88(1.11 s.d) to 2.08 (0.99 s.d) p=0.02. However the SF12 mental component change was not maintained. Mean improvement 0.71 – not significant) | Evidence gaps: More intervention research applying controlled design is needed, looking at this type of initiatives |
| Study design: Uncontrolled before and after study | Exclusion (reasons listed): No mental or physical health conditions | Sample sizes: Assessed for eligibility: N=229 | Follow-up periods: At baseline, 6 months and 12 months post intervention | Wellbeing results The qualitative data showed that the intervention was well-received by participants The data indicated a wide range of responses (both physical and emotional), including increased alertness, social activity, self-worth, optimism about life, and positive changes in health behaviour | Funding resources: The Big Lottery |
| Quality score: - | Motivation/ referral/ payment: Recruitment through a community networking approach, including approaching health and social services staff, churches, voluntary organizations, existing local groups, and the residential care/assisted accommodation sector Introductory leaflets and posters are also distributed through these outlets | Method of analysis: Qualitative content analysis | Method of analysis: Qualitative content analysis | Independence results Not applicable | Applicable to UK? Yes, implemented in UK |
| External validity score: - | | Baseline comparisons: Not applicable | Method of analysis: Qualitative content analysis Mean outcome scores were compared from baseline to follow-up with separate analyses at 6 and 12 months, using two-sided related samples t-tests | Attrition: 121/172 (70 %) at 12-month follow-up | |

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| | | <p>Study power:</p> <p>Powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>Community-based intervention approach</p> <p>Target group:</p> <p>Older adults (50+), whose lives had changed or were about to change in some way (e.g. retirement, moving home, ageing or illness) and who found it difficult to keep in touch with the local community</p> | | | |
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| <p>First author and year:</p> <p>Greenfield 2012</p> <p>Country of study:</p> <p>US</p> <p>Aim of study:</p> <p>To examine whether caregivers report a greater benefit from participating in community-based volunteer and educational activities than non-caregivers</p> <p>Study design:</p> <p>Survey of a randomly selected OASIS participants</p> <p>Quality score: +</p> <p>External validity score:</p> | <p>Setting:</p> <p>OASIS program sites in the United States</p> <p>Participants:</p> <p>Participants were selected from 18 OASIS program (includes community-based volunteer and educational activities) sites across US;</p> <p>The average age of caregivers was 70.5 years</p> <p>Inclusion:</p> <p>Involved in the OASIS program</p> <p>Exclusion (reasons listed):</p> <p>Not reported</p> <p>Motivation/ referral/ payment:</p> <p>Surveys were distributed by post and email to randomly selected OASIS participants</p> | <p>Method of allocation:</p> <p>Not included</p> <p>Intervention(s):</p> <p>OASIS programme which consists of community-based volunteer and educational activities</p> <p>Control:</p> <p>Not included</p> <p>Sample sizes:</p> <p>5092 participants of which 1022 were identified as caregivers</p> <p>Assessed for eligibility: as above</p> <p>Randomised:</p> <p>Survey sample was randomly selected from 12 000 OASIS participants</p> <p>Baseline data:</p> <p>Baseline comparisons:</p> <p>Caregivers were more likely than non caregivers to be female, married, and low-income; slightly less active in OASIS activities (8.4 classes taken vs. 9.5 for non caregivers, and 6.8 volunteer hours vs. 7.1 for non caregivers).</p> | <p>Mental wellbeing measures:</p> <p>The perceived benefits of OASIS program participation were assessed by 6 items designed to measure psychosocial benefits of engagement:</p> <p><i>My circle of friends has increased.</i> <i>My outlook on life has improved.</i> <i>I feel better about myself.</i> <i>I feel that I have made a difference.</i> <i>My life feels more meaningful.</i> <i>I feel more engaged in my community.</i></p> <p>Each item was measured with a 5-point scale. The six items were summed to create a psychosocial benefit score.</p> <p>Independence measures:</p> <p>Not included</p> <p>Other measures:</p> <p>Caregiver status; Intensity of caregiving (assessed on a 4-point scale - from daily to less than once a month); Due to the program's focus on health promotion 2 items assessing health were included in the survey.</p> <p>Follow-up periods:</p> <p>Not applicable</p> <p>Method of analysis:</p> <p>Descriptive statistics; Logistic</p> | <p>Wellbeing results</p> <p>Caregivers were more likely to report benefit on all measures ($p < .05$).</p> <p>Analysis of caregiver status on the summative psychosocial benefit score found a statistically significant difference in benefit scores, with caregivers reporting more benefit than non-caregivers ($\beta = 0.64$, $t=3.85$, $p=.0013$).</p> <p>The adjusted mean benefit score was 20.63 for caregivers vs. 19.99 for non caregivers.</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>Survey distributed to over 12 000; responses received from 5092 participants (41% response rate)</p> | <p>Limitations (author):</p> <p>Data collected using self-report survey;</p> <p>No information about participants' employment status not available;</p> <p>The benefit scale may not capture all of the benefits specifically relevant to caregivers;</p> <p>Findings may not be generalisable to the population other than already active class-takers and volunteers</p> <p>Limitations (review team):</p> <p>Evidence gaps:</p> <p>Further examination of the benefits of educational and volunteer activities among caregivers is needed.</p> <p>To develop more programs focusing on encouraging engagement in educational and volunteer roles.</p> <p>Funding resources:</p> <p>Supported by The Atlantic Philanthropies and the John A. Hartford Foundation</p> <p>Applicable to UK?</p> <p>Yes</p> |
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| | | <p>No difference between caregivers and non caregivers in terms of self-rated health, education or race.</p> <p>Study power: Not reported</p> <p>Intervention delivery: Not included</p> <p>Target group: Caregivers</p> | regression analysis | | |
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| Hanser et al., 2011 | | | | | |
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| <p>First author and year:</p> <p>Hanser 2011</p> <p>Country of study:</p> <p>US</p> <p>Aim of study:</p> <p>To test a caregiver-administered music program with family members who have dementia</p> <p>Study design:</p> <p>Exploratory pilot feasibility study</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>-</p> | <p>Setting:</p> <p>The study was conducted in Massachusetts, USA.</p> <p>Participants:</p> <p>Family caregivers of individuals with dementia. All caregivers were over the age of 65 and lived with the person with dementia. 5 of the 8 carers were women. Two of the carers were daughters.</p> <p>Inclusion:</p> <p>Family caregivers of individuals with dementia</p> <p>Exclusion (reasons listed):</p> <p>None</p> <p>Motivation/ referral/ payment:</p> <p>Potential participants were recruited from memory disorder clinics, diagnostic centres, the Multicultural</p> | <p>Method of allocation: Not applicable</p> <p>Intervention(s):</p> <p>Music-facilitated stress reduction program designed as a low-cost model whereby a music therapist trains the family caregiver in strategies that are conducted in the home by the caregiver alone. In an initial 2-hour training session, the music therapist met with the caregiver/care recipient dyad to discuss musical selections appropriate for relaxation, and to rehearse how the family member with dementia could be engaged with the music. The emphasis was on using music from the 1930s to the 1960s, as well as classical music.</p> <p>Families were asked to listen to an individualised CD together on 3 days each week.</p> <p>Recommended number of sessions: 8-20</p> <p>Control: No control</p> <p>Sample sizes: Assessed for eligibility:</p> | <p>Mental wellbeing measures:</p> <p>Psychological state: Self-report on a Visual Analogue Scale (VAS). Caregivers rated their own relaxation, comfort and happiness, as well as their perception of these states in their care recipients</p> <p>Caregiver burden: The 5-item Caregiving Satisfaction Scale (Lawton, 1988), which address caregivers' feelings of enjoyment, pleasure, appreciation, self-esteem and closeness within the relationship</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>Qualitative measures of quality of life, change in the relationship between family member and caregiver and their satisfaction with the music program</p> <p>Follow-up periods:</p> <p>At the completion of each music listening session, caregivers were asked to write anecdotal reports of responses to the music and interactions with their family member with dementia</p> | <p>Wellbeing results</p> <p>Both care recipients and caregivers experienced enhanced relaxation during the treatment period by an average of 1.96 and 2.55 points, respectively on the VAS scale.</p> <p>Care recipients and caregivers demonstrated an average increase of 1.60 and 1.86 points, respectively, in comfort level</p> <p>Happiness increased by .93 points in care recipients and 1.45 points in caregivers</p> <p>Overall, caregivers experienced a greater benefit than care recipients in all three areas by an average of 1.37 points</p> <p>Most of these positive changes were found to be statistically significant, as determined by Wilcoxon Matched-Pairs Signed Ranks tests</p> <p>There was an overall decrease in caregiving satisfaction over time; but these changes were not statistically significant ($t=15$)</p> <p>Independence results</p> <p>Not applicable</p> | <p>Limitations (author):</p> <p>Small sample size, no controls and no repeated measures</p> <p>Limitations (review team):</p> <p>Self-reported measures on mental wellbeing. Unclear what upper limit of visual analogue scale is.</p> <p>Evidence gaps:</p> <p>More empirical evidence needed on the effects of these kinds of interventions for individuals and communities</p> <p>Funding resources:</p> <p>The John A. Hartford Foundation through the Hartford Geriatric Social Work Scholars Program</p> <p>Applicable to UK?</p> <p>Yes</p> |

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| | Coalition on Aging, and the Alzheimer's Association in the US | <p>N= 14</p> <p>Randomised:</p> <p>Not applicable</p> <p>Baseline data:</p> <p>N=14</p> <p>Baseline comparisons:</p> <p>Not applicable</p> <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>In the caregiver dyad's home by person with musical therapy experience</p> <p>Target group:</p> <p>Family caregivers to individuals with dementia (moderate or severe)</p> | <p>Each caregiver was interviewed at the end of the treatment period</p> <p>Method of analysis:</p> <p>Mean baseline and treatment scores were compared, using the non-parametric Wilcoxon Matched-Pairs Signed Ranks test</p> <p>Pre to post treatment Caregiving Satisfaction Scale scores were compared also with the Signed Ranks Test</p> <p>Anecdotal reports from interviews and comments on questionnaires were analysed through identifying core themes in these data</p> | <p>Attrition:</p> <p>Of the 14 recruited dyads, 8 were able to complete or comply with the project requirements long enough to provide sufficient data</p> | |
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| Haslam 2014 | | | | | |
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| <p>First author and year:</p> <p>Haslam, 2014</p> <p>Country of study:</p> <p>Canada</p> <p>Aim of study:</p> <p>To investigate the effects of traditional story-based reminiscence and novel forms of song-based reminiscences.</p> <p>Study design:</p> <p>Randomised controlled study</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>-</p> | <p>Setting: in each care community</p> <p>Participants: 40 participants living either in independent living, retirement living or assisted care.</p> <p>Inclusion: All participants were required to consent independently, to have time in their schedules to take part in the interventions and to have sufficient comprehension skills as judged by village and activity staff.</p> <p>Exclusion (reasons listed): No exclusion criteria applied</p> <p>Motivation/ referral/ payment: 40 participants were recruited from two congregated living communities, managed by the same parent company.</p> | <p>Method of allocation: Randomly assigned.</p> <p>Intervention(s): 12 sessions for secular song reminiscence (n=13), sharing and singing along with popular music from the 1920s to the 1970s and brief conversations about the songs.</p> <p>Religious song-based reminiscence (n=13) was focused on all Christian songs selected by a chaplain from the 1920 to 1970s. Each session lasted 30 minutes for 12 sessions, two times per week over 6 weeks.</p> <p>Control: 12 standard story reminiscence sessions (n=14) were held twice per week. Each session lasted 30 minutes. The focus was on talking about past memories and experiences with other people in the group using props</p> <p>Sample sizes: 40</p> <p>Assessed for eligibility:</p> <p>Not applicable.</p> <p>Randomised: Yes</p> <p>Baseline data: Higher in secular song group for life satisfaction scores, Story group: 3.9, Secular song group: 4.5, Religious song</p> | <p>Mental wellbeing measures:</p> <p>Quality of life was measured by the Satisfaction with life Scale (Diener, Emmons, Larsen and Griffin, 1985) from 1 to 5 on a five-point scale indicating higher mean values with a stronger sense of wellbeing.</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>Cognitive performance, anxiety</p> <p>Follow-up periods:</p> <p>6 weeks</p> <p>Method of analysis:</p> <p>Analyses of variance (ANOVAs).</p> | <p>Wellbeing results:</p> <p>In the three groups, there were significant increases in life satisfaction at the post-test. Secular song group (p=0.005), religious song group (p=0.018) and story reminiscence group (p=0.01). The largest improvement in life satisfaction was found in the religious song group : fro m 3.8 to 4.0, compared with the secular song group from 4.5 to 4.6 and the story group from 3.9 to 3.9.</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>88% responded at the end.</p> | <p>Limitations (author)</p> <p>Small sample size, people with severe mood disturbance were excluded, this might have contributed to failing to find main effects of the treatment. The absence of an index of depression.</p> <p>Limitations (review team):</p> <p>Participants were recruited from three different living arrangements such as independent living, retirement living, and assisted care. However, the outcomes were not reported separately. No evidence that power calculations used to determine sample size. It is not clear whether all participants completed followed up questionnaire. Little information to assess external validity.</p> <p>Evidence gaps: Future research can explore the impacts of the programmes on older adults with different living arrangements to see whether it would be worth targeting any particular group of people.</p> <p>Funding resources:</p> <p>Sponsored by the Canadian Institute for Advanced Research and funded by the Schlegel-UW Research Institute for Aging (Kitchener, Ontario).</p> |

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| | | <p>group: 3.8</p> <p>Baseline comparisons: the highest score found in secular group.</p> <p>Study power:</p> <p>Not known.</p> <p>Intervention delivery:</p> <p>A manualised intervention to facilitate consistent delivery, containing details on the theme, content, and structure of each session.</p> <p>Target group: older adults living in independent living, retirement living and assisted living facilities.</p> | | | <p>Applicable to UK?</p> <p>Yes</p> |
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| <p>First author and year: Honigh-de Vlaming 2013</p> <p>Country of study: The Netherlands</p> <p>Aim of study: To study the effects of an intervention targeting loneliness</p> <p>Study design: Quasi-experimental study</p> <p>Quality score: +</p> <p>External validity score: -</p> | <p>Setting: Community-based multi-component intervention in the Netherlands</p> <p>Participants: Older community dwelling adults in the Netherlands (mean age 74)</p> <p>Inclusion: Community-dwelling older adults residing in the study region</p> <p>Exclusion (reasons listed): Institutionalised older adults</p> <p>Motivation/ referral/ payment: Participants were recruited by advertisements in the newspaper, leaflets in the waiting room of general practitioners (GP), and GP referral</p> | <p>Method of allocation: Not applicable</p> <p>Intervention(s): Intervention encompassing five components: a mass media campaign, information meetings for interested local elderly people, psychosocial group courses for persons with mental health problems (mild depressive symptoms) or chronic diseases, social activation by the community-based Neighbours Connected intervention and training of intermediaries (homecare nurses, municipal advisors, and volunteers)</p> <p>Control: A control community was selected with characteristics comparable to the intervention community. In the control community, the usual municipal health and welfare services and social activities were offered</p> <p>Sample sizes: Assessed for eligibility: From both the intervention and control community, a random sample of 1,350 non-institutionalised elderly people aged 65 years and over was selected from the municipal administration</p> <p>Randomised:</p> | <p>Mental wellbeing measures: Loneliness literacy: The Loneliness Literacy Scale (Honigh- de Vlaming et al., 2013) Loneliness: The De Jong Gierveld loneliness scale (1985) Social support: Social Support List-Interactions (SSL12-I, Kempen et al., 1995)</p> <p>Independence measures: Not applicable</p> <p>Other measures: Socio-demographic variables Prevalence of chronic diseases Self-rated health Intervention output - reach</p> <p>Follow-up periods: Measurements pre and post intervention (2-year period)</p> <p>Method of analysis: To evaluate the effect of the intervention, linear regression models were constructed with the change scores as dependent variable, with an indicator variable for the intervention (intervention community versus control community) as the effect measure. Adjustment was done for age and gender, followed by additional adjustment for mental health and</p> | <p>Wellbeing results At two year follow up the intervention group scored more favourably than the control group on loneliness literacy subscales: motivation mean scores 2.98 (SD = 0.74) vs 3.07 (SD = 0.77) (relative effect size -4.4%, 95% CI-8.3- -0.7) p<0.05, perceived social support mean scores 2.07 (SD = 0.77) vs 2.17 (0.80) (relative effect size -8.2%, 95% CI-13.6 - -2.4) p<0.05 and subjective norm mean scores 2.44 (SD=1.00) vs 2.65 (SD = 1.00) (relative effect size -11.5%, 95% CI-17.4 - -5.4) p<0.05.</p> <p>No overall effects were observed for social support and loneliness No significant effects was found on social support and loneliness</p> <p>Independence results Not applicable</p> <p>Attrition: Intervention condition: 465/905 (51 %) Control condition: 481/899 (54 %)</p> | <p>Limitations (author): Not RCT design Large attrition rates Insufficient time to expect to see complex intervention translate into impact on loneliness outcomes.</p> <p>Limitations (review team): Self-reported measurements on mental wellbeing outcomes</p> <p>Evidence gaps: Involvement of representatives of different segments of the local target population and intervention providers during all stages of the intervention is needed in the development, implementation and evaluation of community interventions More attention should be given to vulnerable elderly people who are at increased risk of becoming isolated and lonely; these people, with the highest needs, are the most difficult to reach</p> <p>Funding resources: The Ministry of Public Health, Welfare, and Sports (ZonMw project number 7120.0001)</p> <p>Applicable to UK? Yes</p> |
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| | | <p>Not applicable</p> <p>Baseline data:</p> <p>N= 905 (intervention) N= 899 (control)</p> <p>Baseline comparisons:</p> <p>Baseline scores for loneliness and social support did not differ significantly between the intervention and the control group There were more participants with poor mental health in the intervention than in the control group (14% versus 8%, $p < 0.01$)</p> <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>Integrated approach was applied, combining multiple strategies; delivering intervention components to different target groups and in different settings; and influencing a range of outcomes</p> <p>Target group:</p> <p>Both general older adult population, as well as at risk older adults or individuals suffering from mental health problems</p> | church attendance (final model). | | |
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| Lee 2010 | | | | | |
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| <p>First author and year: Lee, 2010</p> <p>Country of study: Hong Kong</p> <p>Aim of study: To assess the effectiveness of music intervention on the quality of life for older adults.</p> <p>Study design: Randomised controlled study</p> <p>Quality score: ++</p> <p>External validity score: +</p> | <p>Setting: at a community centre</p> <p>Participants: older adults aged between 65 and 90 with a mean age of 76.3 years.</p> <p>Inclusion: Older adults living at home, who were alert, oriented and able to hear and communicate verbally in Cantonese</p> <p>Exclusion (reasons listed): No exclusion criteria applied</p> <p>Motivation/ referral/ payment: 40 by the same parent company.</p> | <p>Method of allocation: Randomly assigned with random number generator.</p> <p>Intervention(s): Weekly music listening session. There was a choice of five types of music. The chosen type was then played for 30 minutes. The five types of music included meditative music, Chinese classical, Asian classical, Western classical and slow jazz. A total of 62 musical pieces were loaded onto an MP3 player to allow participants to choose their preferred music.</p> <p>Control: Older people who did not take part in music intervention.</p> <p>Sample sizes: 70 – 35 in each group</p> <p>Assessed for eligibility: Older people living in community, who were able to hear and communicate in Cantonese.</p> <p>Randomised: yes</p> <p>Baseline data: Baseline comparisons: no significant differences between the two groups.</p> <p>Study power: Powered to achieve</p> | <p>Mental wellbeing measures: Quality of life was measure by version 2.0 of the SF-36 Hong-Kong in Chinese.</p> <p>Independence measures: Not applicable</p> <p>Other measures: Physical functioning, physical role, bodily pain, general health.</p> <p>Follow-up periods: 4 weeks</p> <p>Method of analysis: The Shapiro-Wilk test, the Mann-Whitney U test to test for group differences at each time point.</p> | <p>Wellbeing results: After 4 weeks there were significant improvements in vitality, social functioning, emotional role, and mental health between the intervention and the control groups ($p < 0.006$).</p> <p>Independence results Not applicable</p> <p>Attrition: 4 out 70 people withdrew as they didn't like the prepared music in the intervention group. 5.7% dropped out</p> | <p>Limitations (author): Small sample size, not sure whether improved quality life was due to the chosen music or the Hawthorne effect. Only one-site study, non-parametric tests used.</p> <p>Limitations (review team): Intervention would need to have longer duration of intervention time and follow-up periods and more exposure to the programme. Sample size was slightly below power calculation required sample size.</p> <p>Evidence gaps: Parametric tests taking into account confounding factors needed.</p> <p>Funding resources: No specific grant from any funding agency in the public, commercial, or not-for-profit sectors.</p> <p>Applicable to UK? Yes</p> |

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| | | <p>statistical significance. Needed 70 to achieve 80% power at a 5% level of statistical significance.</p> <p>Intervention delivery: Participants were given a MP3 player with earphone and disposable ear pads. The music listening intervention was carried out in a quiet and restful environment without interruptions in the community centre with comfortable chairs and dim light. The researcher left the participant alone.</p> <p>Target group:</p> <p>Community-dwelling older adults</p> | | | |
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Author Malekafzali et al 2010

| First author and year: | Setting: | Method of allocation: | Mental wellbeing measures: | Wellbeing results | Limitations (author): |
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| <p>Malekafzali 2010</p> <p>Country of study:</p> <p>Iran</p> <p>Aim of study:</p> <p>To assess the effectiveness of educational intervention design to promote the health of older people.</p> <p>Study design:</p> <p>Uncontrolled before and after study</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>+</p> | <p>Ekbatan Complex in the western part of Tehran, Iran.</p> <p>Participants:</p> <p>Older people from the Ekbatan Complex</p> <p>Inclusion:</p> <p>For the preliminary assessments, 100 older men and 100 older women were selected.</p> <p>In order to evaluate the interventions, all older people who have received at least 3 pamphlets and had appropriate cooperation with the research team members were selected to answer the questionnaire (100 males and females).</p> <p>Exclusion (reasons listed):</p> <p>Not reported</p> <p>Motivation/ referral/ payment:</p> | <p>Not clear from the description what method of allocation was used.</p> <p>Intervention(s):</p> <p>An educational intervention developed to promote older peoples' health.</p> <p>Control:</p> <p>Not reported</p> <p>Sample sizes:</p> <p>100 participants (86% women and 24% men)</p> <p>Assessed for eligibility:</p> <p>Randomised:</p> <p>Not applicable</p> <p>Baseline data:</p> <p>Needs assessment questionnaire included; demographic details, physical condition, mental health, recreational activities and nutrition.</p> <p>Baseline comparisons:</p> <p>Study power:</p> <p>Not reported</p> <p>Intervention delivery:</p> <p>Following the needs assessment,</p> | <p>The questionnaire included items related to mental health, leisure time, group activity and nutrition.</p> <p>The following dimension were listed in the questionnaire:</p> <p>Life satisfaction Having a meaningful life Not worried about the future Feeling of happiness Hope for the future</p> <p>Spend time in leisure activities Performance of exercise Different types of exercises</p> <p>Consumption of healthy foods Avoidance of detrimental foods First food priority Second food priority Third food priority</p> <p>Participation in group activities Club membership</p> <p>Independence measures:</p> <p>Other measures:</p> <p>Follow-up periods:</p> <p>Effect of the intervention assessed after a 9-month period.</p> <p>Method of analysis:</p> <p>Descriptive statistics Chi-square</p> | <p>Indicators related to mental health - having a meaningful life and a feeling of happiness – for women, in all age groups, had increased after the interventions (p= 0.00).</p> <p>For women aged 70 and older, Not being worried about the future, was significantly different before and after the intervention (p= 0.004). While some 53% of the women aged 60-69 before the interventions reported that, they were happy most of the time, following the intervention 78% reported feeling happy most of the time (p=0.01).</p> <p>For men, -the feeling of happiness- was significantly different before and after the intervention (p=0.05). Sport activities in older women have increased after the intervention (p=0.01). After the intervention, walking have decreased and aerobics and warming up movements have increased (p= 0.00).</p> <p>Similar results were found for men indicating a significant decrease in walking after the intervention, and an increase in warm-ups and aerobics (p= 0.00). After the intervention there was a significant increase in the group activities among older women (from 16.7% before the intervention to 61.5% following the intervention (p=0.00).</p> <p>As for the changes in food preferences, only the second</p> | <p>Participants were unlikely to be fully representative sample.</p> <p>Reduced sample size due to the lack of cooperation of the older people during the interventions. The study was based on self-reported information which could be biased by the participants' recall.</p> <p>Limitations (review team): Lack of standardised measures of mental wellbeing and independence.</p> <p>Evidence gaps: Not reported</p> <p>Funding resources: This project was supported by Tehran University of Medical Science</p> <p>Applicable to UK?</p> <p>Possibly – may also be a model for reaching culturally sensitive populations</p> |

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| | | <p>collected data was analysed. Based on the findings, educational intervention for improving the health of older people was designed.</p> <p>Volunteers attended a four-day training workshop.</p> <p>After achieving necessary knowledge and skill requirement, the volunteers passed on their knowledge to all older people in Ekbatan through different forms including home visits and face to face older people education; referral to physicians; education through distributing educational pamphlets to older people; education through arranging a general meeting-question and answer session - with the presence of the experts; and attending exercising session.</p> <p>Within a 9-month period of the intervention, each participant received at least four home visits. During this time, volunteers were monitored by the research team and the effectiveness of the interventions was measured through a questionnaire.</p> <p>Target group:</p> <p>Older people</p> | | <p>preference among women aged 60-69 was significantly different from before to after the intervention ($p=0.05$) (this change was from rice before the intervention to vegetables following the intervention).</p> <p>Independence results</p> <p>Attrition:</p> <p>Not reported</p> | |
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| <p>First author and year:</p> <p>Mehta 2004</p> <p>Country of study: Singapore</p> <p>Aim of study:</p> <p>To explore the psychological well-being of older adults aged 60 and older, participating in a senior centre programme</p> <p>Research questions:</p> <ol style="list-style-type: none"> 1. Does the Good Life programme have an effect on older adults' psychological well-being? 2. What is the added value of the qualitative approach in the delivery of the Good Life programme? <p>Study design:</p> <p>Uncontrolled before and after study</p> | <p>Setting:</p> <p>A wellness centre dedicated to promoting productive aging and enhancing the physical and mental health of the elderly.</p> <p>Participants:</p> <p>Older adults aged 60 and older, women in majority, who participate in the activities organized in the community centre</p> <p>Inclusion:</p> <p>Older adults that participated in the senior centre activities</p> <p>Exclusion (reasons listed):</p> <p>Not listed</p> <p>Motivation/ referral/ payment:</p> <p>Purposive sampling by the coordinator of the project</p> | <p>Method of allocation: Not applicable</p> <p>Intervention(s): Active senior centre programme participants for more than 18 months (regular members)</p> <p>The centre provides a holistic and broad array of programmes and activities ranging from knowledge-based and educational (cooking courses, balloon twisting) to social and recreational (farms visits, potlucks, line dancing), physiological (massage facilities) to interactional (intergenerational activities), personal wellness (manicure, pedicure, facial, do-it-yourself) to health care (basic health screening, cancer screening), as well as community projects on prevention of diseases such as Dengue Fever.</p> <p>Control: Centre programme participants for less than 6 months (fresh members) served as a comparison group</p> <p>Sample sizes:</p> <p>Assessed for eligibility: Not applicable</p> <p>Randomised: Not applicable</p> <p>Baseline data: Group 1: N= 6,</p> | <p>Mental wellbeing measures:</p> <p>Life satisfaction (Likert scale from 1-9)</p> <p>Psychological wellbeing</p> <p>Happiness level</p> <p>The questions on life satisfaction and happiness level were adopted from the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985; Pavot & Diener, 1993)</p> <p>The establishment of new friendships</p> <p>Questions on these domains were adopted from various instruments and applied in semi-structured interviews</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>Socio-demographic factors</p> <p>Frequency and length of membership of the older adults at Good Life Senior Centre</p> | <p>Wellbeing results</p> <p>Content analysis highlighted the differences in the life satisfaction and happiness level between regular members and fresh members after joining the Good Life Programme</p> <p>The mean score change in life satisfaction was reported as 3.7 and 0.0 for the regular and fresh members respectively; 4 out of 6 regular members showed at least 44% increase in their life satisfaction level after joining the programme.</p> <p>The mean score change in happiness was 2.8 for the regular members and 0.2 for fresh members; 4 out of 6 regular members had shown at least 33% increase in their happiness level after becoming programme participants. Any statistical difference between groups was not reported.</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>Not reported</p> | <p>Limitations (author): Small sample size</p> <p>Limited generalizability to other contexts and population groups. No random assignment of participants to the groups. Self-reported and broad non-standardised measures were used</p> <p>Limitations (review team): Scarce reporting</p> <p>Evidence gaps: Future research is needed on the well-being of older adults in the local context, in order to better integrate them into society</p> <p>Funding resources:</p> <p>Not reported</p> <p>Applicable to UK?</p> <p>Limited applicability considering the context</p> |

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| <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>-</p> | | <p>Group 2: N= 6</p> <p>Baseline comparisons: Not applicable</p> <p>Study power: Not powered to achieve statistical significance</p> <p>Intervention delivery: The Good Life @ South East was a project of the Marine Parade Family Service Centre (MPFSC), in collaboration with the South East Community Development Council (SECDC) and Citizens' Consultative Committee (CCC)</p> <p>Target group: Older adults aged 60 and over who participate in the activities organised in the community centre</p> | <p>Follow-up periods:</p> <p>Not applicable</p> <p>Method of analysis:</p> <p>Content analysis of the semi-structured interview material . Mean score calculations</p> | | |
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| Mui et al, 2013 | | | | | |
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| <p>First author and year:</p> <p>Mui, 2013</p> <p>Country of study: USA</p> <p>Aim of study: To evaluate the effect of a pilot programme for older Chinese immigrants on social engagement and social support.</p> <p>Study design:</p> <p>Exploratory uncontrolled before and after study; (including survey following intervention).</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>++</p> | <p>Setting:</p> <p>Community senior centre or homes in New York</p> <p>Participants:</p> <p>Older Chinese immigrants with the mean age of 72.1(64-86) and with very low English proficiency. Mostly women (72%), married (89%), born in mainland China (94%). 72% reported their health condition was “fair”, 22% good, 6% excellent.</p> <p>Inclusion:</p> <p>Community-dwelling older adults willing to volunteer to help other Chinese immigrants with caregiving burden</p> <p>Exclusion (reasons listed):</p> <p>Not mentioned.</p> <p>Motivation/ referral/ payment:</p> <p>A bilingual flyer with an overview of the programme was distributed at the senior centre. The flyer included information on the programme, the stipend, the 6-month commitment, the telephone support component.</p> <p>Chinese caregivers of ill relatives with unmet needs were identified by the hospital-based social worker and referred to the senior centre social worker for matching with volunteers based on Chinese dialect and</p> | <p>Method of allocation:</p> <p>Not mentioned.</p> <p>Intervention(s):</p> <p>A Phone Angel Programme, designed to address caregiver burden in Chinese immigrant families with additional stresses of linguistic and social isolation.</p> <p>The Phone Angel programme was designed to train volunteers to serve as friendly volunteers for isolated caregivers and provide them emotional and coping skill support in their native language.</p> <p>Training was comprised of 72 hour, intensive training sessions from Nov 2010 to Feb 2011, followed by ongoing training sessions every 3-4 weeks. Volunteers were trained to provide telephone support to caregivers using Mandarin or Cantonese, whichever language the caregiver had the most linguistic comfort with, at least once per week.</p> <p>Control:</p> <p>No-intervention control</p> <p>Sample sizes:</p> <p>19 (older adults)</p> <p>Randomised: not applicable.</p> | <p>Mental wellbeing measures:</p> <p>A focus group and a short questionnaire with closed and open-ended questions.</p> <p>Independence measures:</p> <p>Not applicable.</p> <p>Other measures:</p> <p>Close/open-ended questionnaires for various perceived benefits of volunteering, rating options of “agree” or disagree or worse, same better”</p> <p>Follow-up periods:</p> <p>6 months</p> <p>Method of analysis:</p> <p>Mainly qualitative analyses</p> | <p>Wellbeing results:</p> <p>100% of the volunteers “I feel empowered and happier because I have the opportunity to serve others.” And “I have developed a stronger sense of purpose in my life.</p> <p>I feel better about myself (67%)</p> <p>“My spouse and I have become more active in social activities (61%).”</p> <p>“My relationship with my family has improved (72%).”</p> <p>“I have enlarged my social circle of friends (83%).”</p> <p>Independence results</p> <p>Not applicable.</p> <p>Attrition:</p> <p>Older adults: 1/ 19 (5%)</p> | <p>Limitations (author):</p> <p>Future studies looking at older people living alone, with mental health problems, new immigrants etc.</p> <p>Limitations (review team):</p> <p>No control group.</p> <p>Generalisability issues to other ethnic groups</p> <p>Evidence gaps:</p> <p>Funding resources:</p> <p>The Unite Hospital Fund</p> <p>Applicable to UK?</p> <p>Yes, potentially it could be applied to the Chinese immigrant population</p> |

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| | <p>gender.</p> <p>Phone Angel volunteers received a \$50 stipend after the intensive training programme and another \$50 after 6 months of service.</p> <p>Volunteers could call Chinese family caregivers from both the senior centre and their own homes. Calling cards were provided to the Phone Angels so that they did not have to use their own phones, which protected their privacy.</p> | <p>Baseline data:</p> <p>Intervention (older adults): 19</p> <p>Baseline comparisons:</p> <p>Not applicable.</p> <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>Initial training was conducted every 2 weeks but as volunteers gained confidence and a sense of competence in their role as volunteers for caregivers, training was spaced to 2 or 4 weeks apart.</p> <p>Phone Angels were advised to keep calls to 30-60 min in duration and maintain the relationship over the phone rather than suggesting face-to-face contact.</p> <p>Target group:</p> <p>Chinese immigrants with extra burden of caring giving and social isolation, linguistic and cultural barriers.</p> | | | |
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| O'Shea & Ni Léime 2012 | | | | | |
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| <p>First author and year: O'Shea 2012</p> <p>Country of study: Ireland</p> <p>Aim of study: To evaluate a national arts festival called Bealtaine that celebrates creativity in older people each year</p> <p>Study design: Exploratory study, including cross sectional survey Two major postal surveys and face to face interviews were used to assess the impact of the festival.</p> <p>Quality score: -</p> <p>External validity score: ++</p> | <p>Setting: The intervention was implementation across Ireland</p> <p>Participants: Around 100 000 people across the country, mainly retired older people (65+)</p> <p>Inclusion: People retired from paid and unpaid work who are aged 65 years and over, but there is no exclusion policy - younger older people may also attend events in the festival</p> <p>Exclusion (reasons listed): No exclusion criteria applied</p> <p>Motivation/ referral/ payment: The widely distributed Bealtaine brochure lists the major events and venues in each county and describes in more detail some of the high-profile activities. Inclusiveness is a major aim of the festival</p> | <p>Method of allocation: Not applicable. Purpose sampling method</p> <p>Intervention(s): Bealtaine is a month-long festival, held annually during the month of May, to celebrate creativity in older age. The festival encompasses many art-forms and includes both long-standing professionally facilitated arts programmes, sometimes using international co-ordinators and one-off events linked to local organisations. Each year there is a unifying theme for the festival which various organisers across the country can subsequently use, if they wish, as a focus for their own event.</p> <p>Control: No control</p> <p>Sample sizes: Postal survey of all 435 organisers of Bealtaine events across the country. (Response rate 43%). Participant postal questionnaires for older people sent to one randomly selected Active Retirement Association (ARA) in each county in Ireland. The ARA was asked to distribute the questionnaire to all of its members and a stamped addressed envelope was provided for the return of completed questionnaires to the researchers. 235 returned – 100%</p> | <p>Mental wellbeing measures: Quality of life, Self-expression, Personal development, Critical appraisal, Social networking, Engagement with the community</p> <p>Independence measures: Not applicable</p> <p>Other measures: Socio-demographic variables. Engagement with the arts. Type of event/programme attended. Type of organisation. Level of involvement among organisations</p> <p>Follow-up periods: None</p> <p>Method of analysis: The evaluation used quantitative and qualitative methods to analyse two major postal surveys with organisers and consumers of the festival and face-to-face interviews with older participants, artists and organisers</p> | <p>Wellbeing results</p> <p>Both participants (87 %) and organisers (68 %) shared the view that Bealtaine facilitates self-expression among older people This was particularly evident in relation to dance, visual art and creative writing. 59 % of organisers perceived the impact of Bealtaine on the personal development of older people to be strong or very strong.</p> <p>89 % of participants agreed that participation in Bealtaine encouraged their personal development in terms of enhanced learning and organisational skills.</p> <p>86 % of the participants reported that participation in Bealtaine has improved their quality of life. 67 % of organisers believed that participating in Bealtaine had a strong impact on the quality of life of older participants including reducing loneliness, combats depression; increased social networking; pride in skills/achievements</p> <p>59 % of organisers saw strong effects on social networking among the participants and 95 % of the participants reported that they agreed with the statement that 'participating in Bealtaine means that I have got to know people I</p> | <p>Limitations (author): The questionnaire and included question items were not tested for validity and reliability. Uncontrolled study design with purpose sampling methods</p> <p>Limitations (review team): Rather descriptive, uncontrolled study with limited opportunities to measure impact of the intervention. No standardised measures, one-item questions only.</p> <p>Evidence gaps: Social and health care systems often view public support for older people in terms of an illness paradigm, rather than a health-enhancing framework. More holistic approaches are needed in the promotion of mental health and social inclusion among older people. More information is needed on the various pathways and transmission mechanisms between creativity in older age and improved personal and public health.</p> <p>Funding resources: None reported</p> <p>Applicable to UK? Yes</p> |

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| | | <p>response rate in some ARAs. 26 face to face interviews.</p> <p>Intervention delivery:</p> <p>The Age and Opportunity organisation operates the festival. The intervention engaged different types of organisations, such as local authorities, libraries, educational institutions, health and social care organisations and voluntary bodies for older people</p> <p>Events are organised both by older volunteers, arts officers, librarians, artists, facilitators and health-care workers. The intervention was delivered across Ireland</p> <p>Target group: People retired from paid and unpaid work who are aged 65 years and over</p> | | <p>wouldn't otherwise have met'</p> <p>Those engaged in intergenerational projects mention that they have extended their social networks by getting to know local young people</p> <p>87 % of the older participants agreed with the statement that 'participation in Bealtaine had increased their level of involvement in their community'</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>Qualitative interviews with older participants in various arts programmes, facilitators of arts programmes, artists and organisers of events: 26 face-to-face interviews conducted</p> <p>Survey targeting 435 organisers of Bealtaine events across the country: 43 % response rate</p> <p>Survey targeting older participants: 253 completed questionnaires out of approx. 800</p> | |
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| Rosenbaum et al 2009 | | | | | |
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| <p>First author and year:</p> <p>Rosenbaum 2009</p> <p>Country of study:</p> <p>USA</p> <p>Aim of study:</p> <p>To look at how a café that offers senior-age customers breakfast, lunch, coffee, snacks, and social activities (e.g., exercise classes, game clubs, computer classes, blood pressure screenings) has crafted an environment where some of its customers sense its restorative stimuli.</p> <p>Study design:</p> <p>Uncontrolled before and after study</p> <p>Quality score: -</p> <p>External validity score: -</p> | <p>Setting: Community activity café for older people.</p> <p>Participants: 14 (16%) were under 60, 21 (23%) were 60 to 69, and 55 (61%) were 70 to 89. 18 (20%) of participants were male.</p> <p>Inclusion: None stated</p> <p>Exclusion (reasons listed):</p> <p>None stated</p> <p>Motivation/ referral/ payment:</p> <p>Each respondent received a small gift (valued at \$5) for participation in the study.</p> | <p>Method of allocation:</p> <p>Not applicable</p> <p>Intervention(s): Café represents a “hybrid third place,” one between an archetypical neighbourhood café and an older person’s activity centre. It offers its customers breakfast, lunch, and snack options, as well as myriad daily activities, such as weight-lifting, yoga, art classes, blood pressure screenings, computer classes and volunteering opportunities.</p> <p>Control:</p> <p>None</p> <p>Sample sizes: Convenience sample of 90 Café customers.</p> <p>Assessed for eligibility: No</p> <p>Baseline data: 90 participants; 72 women and 18 men</p> <p>Baseline comparisons:</p> <p>Not applicable</p> <p>Study power: Not applicable</p> <p>Intervention delivery: Community café</p> <p>Target group: Older people</p> | <p>Mental wellbeing measures:</p> <p>Hartig’s 13-item Short- Version Revised Perceived Restorativeness Scale (SPRS)</p> <p>Respondent’s perceived social support from other customers from the Social Support Questionnaire</p> <p>Transactions Scale (SSQT), which was refined for a third place diner by Rosenbaum (2006; Rosenbaum & Massiah, 2007).</p> <p>Independence measures:</p> <p>Other measures:</p> <p>Follow-up periods: One time point survey only</p> <p>Method of analysis: Cluster analysis then ANOVA and MANOVA to look at associations between social support, activity participation and customer social support</p> | <p>Wellbeing results: 27 individuals has high levels of restoration and 60 low levels of restoration. Volunteering personal time at the café was associated with high levels of restoration. 14 of those who achieved high levels of restoration (51%) volunteered compared to 14 (23% of those that did not achieve restoration) $P < 0.001$.</p> <p>ANOVA where high or low restoration cluster membership independent variable and number of activities dependent indicated this was significant was significant: $F(1,85) = 4.72, p < .05$. Respondents in the high restoration group participate in approximately nine activities ($M = 9.26, SD = 4.19$), those in the low restoration group participate in about seven ($M = 7.46, SD = 3.45$). Respondents in the low restoration group had an average social integration score of 16 ($M = 16.00, SD = 8.17$), but those in the high restoration group had a score of nearly 23 ($M = 22.93, SD = 11.89$). The high restoration cluster also had more social support from other customers Wilks’s lambda = .70, $F(2, 78) = 19.22, p < .001$.</p> <p>Independence results</p> <p>Attrition: 3/90 = 3%</p> | <p>Limitations (author):</p> <p>Do not have enough evidence to determine whether the lack of male presence in the restorative group was due to the low sample size or to an unknown cause.</p> <p>Limitations (review team):</p> <p>Convenience sample; one point in time measurement only; associations rather than demonstrating effectiveness of interventions.</p> <p>Evidence gaps: Authors suggest future researchers are encouraged to continue to explore whether gender influences restoration in commercial versus natural settings.</p> <p>Funding resources:</p> <p>Applicable to UK? Yes such a café could exist</p> |

| Saito et al 2012 | | | | | |
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| <p>First author and year:</p> <p>Saito 2012</p> <p>Country of study:</p> <p>Japan</p> <p>Aim of study:</p> <p>To evaluate the effects of an intervention program aimed at preventing social isolation, loneliness, depression, and improving subjective well-being among elderly Japanese migrants.</p> <p>Study design:</p> <p>Randomized controlled trial</p> <p>Quality score:</p> <p></p> <p>External validity score:+</p> | <p>Setting:</p> <p>Public facility in City A located in the suburbs of Tokyo</p> <p>Participants:</p> <p>Older people 65 years and older who experienced relocation within 2 years. The average age of participants in the intervention group was 72.6. 40.0% were male and 45% were married.</p> <p>Inclusion:</p> <p>Older people who moved into City A within 2 years</p> <p>Exclusion (reasons listed):</p> <p>People who moved to residential facilities within 2 years.</p> <p>Motivation/ referral/ payment:</p> <p></p> | <p>Method of allocation:</p> <p>Participants were randomly assigned to two groups</p> <p>Intervention(s): A group-based educational, cognitive, and social support program designed to prevent social isolation of older people who recently relocated</p> <p>Control: Randomly assigned control group</p> <p>Sample sizes:</p> <p>n=21 (intervention group) n=42 (control group)</p> <p>Assessed for eligibility:</p> <p>Randomised: Participants were randomly assigned to two groups with an allocation ratio of 1:2 for the intervention and control groups.</p> <p>Baseline data: All participants in the intervention group were assessed for their health status, and 18 were found to be independent with instrumental activities of daily living. Five participants (25.0%) from the intervention group and 20 (50.0%) from the control group were categorised as having at least mild depressive status.</p> <p>Baseline comparisons:</p> <p>No statistical difference was found between the intervention and control groups in terms of participant characteristics at pre-test other than</p> | <p>Mental wellbeing measures:</p> <p><u>Indicators of subjective well-being, depression, and loneliness</u> <i>Subjective well-being</i> was assessed by a 10-item Japanese version of the the LSI-A which measures the long-term cognitive evaluation of a person's life as well as transient affective feelings (scores ranged from 10 to 30). <i>Loneliness</i> was measured using the AOK loneliness scale - a version of the revised UCLA loneliness scale.</p> <p><u>Indicators of social support, network, and activity</u> <i>Social support</i> was measured using four items related to emotional support and four items related to instrumental support provided by the participants' informal networks, such as family members, children who live apart from the participant, relatives, friends, or neighbours. A score of 1 was assigned to each for each item if they received support from any informal networks, and a score of 0 if they received no support.</p> <p><i>Social network</i> was assessed with one item that evaluated the frequency of face-to-face contact with friends or neighbours on a scale from 1 (no contact) to 6 (contact more than two times a week).</p> <p><i>Frequency of participation in group activities</i> such as neighbourhood organisation, commercial organisation, hobby group, or</p> | <p>Wellbeing results</p> <p>The intervention had a significant positive effect on subjective well-being measured by the LSI-A ($p = 0.039$), social support ($p = 0.013$), and familiarity with services scores ($p = 0.008$). A significant negative effect on the AOK loneliness scale ($p = 0.011$) was found over the 6 months of the study period.</p> <p>In the control group, the AOK score at T1 significantly increased at T2 ($p < 0.05$), and the social support score at T1 and T2 significantly decreased at T3 ($p < 0.05$).</p> <p>Additional subgroup analyses of a high-risk group with AOK scores of 11 or above, found that the LSI-A scores of the intervention group at T1 increased significantly at the 6 month post-test (T3) ($p < 0.05$).</p> <p>No significant effect was found in the high-risk control group. In the low-risk intervention group with no loneliness, only increased familiarity with services was significant ($p < 0.05$).</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>Intervention group: 1/21 (4.8%) Control group: 2/42 (4.8%)</p> | <p>Limitations (author):</p> <p>Small sample size; self selected participation in programme so results may not be generalisable. Group allocation and analyses were not blinded.</p> <p>Limitations: Review Team</p> <p>Not clear whether health or social care professionals play a role in service delivery.</p> <p>Evidence gaps:</p> <p>To develop a variety of group-based programs targeted at specific groups, utilise existing resources such as community volunteer organizations, and provide a specially developed services for individuals who require greater social integration in the community setting.</p> <p>Funding resources:</p> <p>Grant-in-Aid for Scientific Research C (17590535) from the Japan Society for the Promotion of Science</p> <p>Applicable to UK?</p> <p>Yes</p> |

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| | | <p>familiarity with services, which was significantly higher in the control group ($p = 0.041$).</p> <p>Study power:</p> <p>Not reported</p> <p>Intervention delivery:</p> <p>Six weeks intervention period.</p> <p>The intervention consisted of 4 two-hour sessions. Sessions were conducted once every 2 weeks.</p> <p>The first session introduced the intervention programmes and provided an opportunity for participants to meet each other and staff. The second session was focus group discussion about relocation experiences. The third session was used to determine the activities that different participants were interested in. In the final session, participants were taken on a sightseeing tour of City A to show them public facilities and historical places.</p> <p>Target group:</p> <p>Older people who recently relocated</p> | <p>religious group was assessed with one item that ranged from 1 (not participating) to 6 (participating more than two times a week).</p> <p>Independence measures:</p> <p>Not included</p> <p>Other measures:</p> <p><i>Familiarity with the formal services</i> provided by City A was used as a proxy measure for service utilisation.</p> <p>Follow-up periods:</p> <p>Post-test 1 month after intervention (T2)</p> <p>Post-test 6 months after intervention (T3)</p> <p>Method of analysis:</p> <p>t-tests; Fisher's exact tests; a linear mixed-model analysis; Subgroup analyses by severity-of-loneliness level were carried out to determine whether the effect of the intervention programme was different on people with different risk levels. Wilcoxon signed-rank test used to test for these differences.</p> | | |
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| Savundranayagam et al., 2011 | | | | | |
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| <p>First author and year:</p> <p>Savundranayagam 2011</p> <p>Country of study: US</p> <p>Aim of study: To investigate how the psychoeducational intervention ‘‘Powerful Tools for Caregivers’’ influences burden of spouse caregivers.</p> <p>Study design: Quasi-experimental</p> <p>Quality score:-</p> <p>External validity score:-</p> | <p>Setting:</p> <p>PTC classes offered in eight states of the US (California, Illinois, Iowa, Montana, North Carolina, Oregon, Washington, and Wisconsin)</p> <p>Participants: Spouse caregivers Average age of caregivers: 71 years in the PTC group and 65 years in the comparison group. The majority of caregivers (78%) were wives to the care receiver</p> <p>Inclusion: Caregivers and their spouses</p> <p>Exclusion (reasons listed): None</p> <p>Motivation/ referral/ payment:</p> <p>Spouses were recruited from PTC classes offered in eight states (California, Illinois, Iowa, Montana, North Carolina, Oregon, Washington, and Wisconsin) between April 2007 and December 2008</p> | <p>Method of allocation: Not applicable</p> <p>Intervention(s): ‘‘Powerful Tools for Caregiving’’ Programme, an education programme for family caregivers of older adults Based on a self-efficacy model, the program empowers family caregivers to reduce negative effects of caregiving and to practice self-care. 2.5 hour sessions, once a week, over a 6-week period</p> <p>Control: Comparison group of spousal caregivers from the League of Experienced Family Caregivers (LEFC), which is a registry of family caregivers who volunteer to share information about their caregiving experiences.</p> <p>Sample sizes:</p> <p>Assessed for eligibility: Not reported</p> <p>Randomised: Not applicable</p> <p>Baseline data:</p> <p>N=115 (intervention)</p> <p>N=95 (control)</p> | <p>Mental wellbeing measures:</p> <p>Caregiver burden: Montgomery et al. (2000) burden measure. Stress burden included five items such as anxiety and depression. Relationship burden included five items assessing the extent to which caregivers perceived care-receivers’ behaviour as manipulative and overly demanding. Objective burden included six items assessing the extent to which care demands infringed upon time or privacy that caregivers had for themselves and others</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>Caregiver’s general health status</p> <p>Length of caregiving</p> <p>Functional status of the Care receiver</p> <p>Problem behaviours of the care receiver</p> <p>Follow-up periods:</p> <p>Before and after the six-week intervention</p> | <p>Wellbeing results</p> <p>Group allocation was a significant predictor of stress and objective burden (standardized co-efficient = 0.14 and 0.12 $p < 0.05$ respectively);</p> <p>PTC participants reported significantly lower levels of stress burden and objective burden than comparison group participants post intervention period.</p> <p>There were no group differences for relationship burden</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>22 %</p> | <p>Limitations (author): Lack of random assignment to treatment and comparison groups</p> <p>Limitations (review team):</p> <p>No general wellbeing measures applied</p> <p>Evidence gaps:</p> <p>The mixed results regarding the impact of PTC on burden raise questions about which aspects of PTC’s curriculum are linked with decreases in objective burden and stress burden and why PTC did not affect relationship burden</p> <p>Future research needed on characteristics of caregivers who are likely to benefit the most from PTC and similar programmes</p> <p>More research needed on expanding the programme target group to be more culturally diverse</p> <p>Funding resources:</p> <p>Hartford Foundation’s Geriatric Social Work Faculty Scholars program and Helen Bader Foundation</p> |

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| | | <p>Baseline comparisons: Differences were observed between both groups on four characteristics; almost twice as many comparison group participants (67%) than PTC participants (34%) had provided care for five or more years; the average score for self reported health was higher for PTC participants than comparison participants. They were also less educated and were caring for people with less functional decline than comparison group participants</p> <p>Study power: Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>The intervention was offered in eight states (California, Illinois, Iowa, Montana, North Carolina, Oregon, Washington, and Wisconsin) between April 2007 and December 2008</p> <p>Target group:</p> <p>Spousal caregivers</p> | <p>Method of analysis:</p> <p>Structural equation modelling (SEM) using LISREL 8.8 was employed</p> <p>The inclusion of propensity scores in the analysis reduces the potential impact of baseline differences on the observed outcomes</p> | | <p>Applicable to UK?</p> <p>Yes</p> |
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| Seinfeld 2013 | | | | | |
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| <p>First author and year:</p> <p>Seinfeld 2013</p> <p>Country of study:</p> <p>Spain</p> <p>Aim of study: To study the specific effects of musical training vs. the effects of other leisure activities in elderly people</p> <p>To evaluate the impact of piano training on cognitive function, mood and quality of life (QOL) in older adults</p> <p>Study design:</p> <p>Quasi-experimental study</p> <p>Quality score:</p> <p>+</p> <p>External validity score:</p> <p>-</p> | <p>Setting: Community centre in Barcelona.</p> <p>Participants: Healthy older adults aged 60 to 84</p> <p>Inclusion:</p> <p>Older adults over the age of 60 years, naïve to reading music or playing a musical instrument and with no history of mental or cognitive disorders. Mean age in both intervention and control group 69. Another requirement for participation was a high interest in playing the piano and making time for practice.</p> <p>Exclusion (reasons listed):</p> <p>Older adults suffering from any mental or cognitive disorder or who used psychoactive medications</p> <p>Motivation/ referral/ payment: Participants were recruited from local community centres in the city of Barcelona. The assignment of participants to the piano group was done upon motivation, level of interest for the activity, time available for practice and fulfilment of the inclusion and exclusion criteria. Matched controls were recruited. They were involved in other leisure activities for the 4-month that the study lasted. Piano</p> | <p>Method of allocation: Non-random allocation process</p> <p>Intervention(s): Weekly group based piano lessons and individual 45 minutes daily practice for 4-months. This included learning musical theory, sight-reading and playing a keyboard</p> <p>Control: Participating in other types of leisure activities (e.g. physical exercise, computer lessons, painting lessons). 62% practiced more than one single physical activity per week and 83% also participated in other types of academic and art training.</p> <p>Sample sizes: Assessed for eligibility: N=41</p> <p>Randomised: Not applicable</p> <p>Baseline data: Intervention (n=13), Control (n=16)</p> <p>Baseline comparisons: Not applicable</p> <p>Study power: Not powered to achieve statistical significance</p> <p>Intervention delivery: Community-centre on a weekly basis by the music teacher who had designed the programme</p> | <p>Mental wellbeing measures:</p> <p>Quality of life: WHO QOL-BREF</p> <p>Profile of Mood States (POMS), subscales such as tension, anger, fatigue</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>Depression: Beck depression Inventory (BDI)</p> <p>Socio-demographic factors</p> <p>Amount of time for practice</p> <p>Follow-up periods:</p> <p>Before and immediately after the intervention (after 4 months)</p> <p>Method of analysis:</p> <p>Analysis of data was carried out using 2-Group × 2-Condition Split-Plot Analysis of Variance (ANOVAs)</p> | <p>Wellbeing results</p> <p>For WHO QOL-BREF, a significant Group × Condition interaction was found in the psychological health domain [$F(4.45)$, $p = 0.045$, $\eta^2p = 0.151$).</p> <p>Psychological health scores (pre-programme mean score and <i>SE</i>: 30.81 ± 0.53; post-programme mean score and <i>SE</i>: 29.50 ± 0.33) increased. Scores of the control group showed a tendency to decrease or not to change maintain the same in psychological domains (pre-programme mean score and <i>SE</i>: 23.50 ± 0.41; post-programme mean score and <i>SE</i>: 23.27 ± 0.56).</p> <p>For POMS there was a significant Group × Condition interaction in the Fatigue factor [$F(6.86)$, $p=0.015$, $\eta^2p = 0.20$] and in the total POMS score [$F(4.91)$, $p = 0.036$, $\eta^2p = 0.16$]. The fatigue scores (pre-programme mean score and <i>SE</i>: 4.23 ± 1.20; post-programme mean score and <i>SE</i>: 2.92 ± 0.70) and the total score in the POMS (pre-programme mean score and <i>SE</i>: 117.70 ± 7.18; post-programme mean score and <i>SE</i>: 111.33 ± 6.23) decreased from the pre-programme to the post-programme assessment in the piano group.</p> <p>The control group showed the</p> | <p>Limitations (author):</p> <p>Relatively small sample size. No random assignment of participants to the groups. The group class format of the piano training makes it difficult to determine whether some of the observed effects were also related to social interactions in the weekly class</p> <p>Limitations (review team):</p> <p>Limited measures of positive mental wellbeing. Drop outs excluded from analysis.</p> <p>Evidence gaps:</p> <p>Future studies should explore the effects of music training with larger sample sizes, random assignment to the group, and blinded examiners, to explore the generalisability of results.</p> <p>Funding resources:</p> <p>Agrupació Mútua</p> <p>Applicable to UK?</p> <p>Yes</p> |

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| | lessons were totally free. | <p>Target group:</p> <p>Healthy older adults (60+) who were naïve to reading music or playing a musical instrument</p> | | <p>opposite pattern, (pre-program mean score and <i>SE</i>: 104.31 ± 3.14; post-program mean score and <i>SE</i>: 106.93 ± 2.85) and fatigue (pre-program mean score and <i>SE</i>: 2.13 ± 0.55; post-program mean score and <i>SE</i>: 3.19 ± 0.58) .</p> <p>Attrition:</p> <p>12/25 in piano group (48%)</p> | |
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| Sole 2010 | | | | | |
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| <p>First author and year:</p> <p>Sole et al 2010</p> <p>Country of study:</p> <p>Spain</p> <p>Aim of study:</p> <p>To evaluate and to compare the impact of three music programmes on quality of life if healthy older people.</p> <p>Study design:</p> <p>Uncontrolled before and after study</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>-</p> | <p>Setting: leisure centres</p> <p>Participants: healthy older adults aged 65 and over with a mean age of 72.6. 83 % were women and 17% were men. 51% 2343 married, 355 widowed, monthly income: average income was between €900-1200.</p> <p>Inclusion: to live at home, to maintain an independent life, and not to have a major cognitive impairment</p> <p>Exclusion (reasons listed):</p> <p>No exclusion criteria applied</p> <p>Motivation/ referral/ payment:</p> <p>Participation was totally voluntary.</p> <p>The type of motivation: social reasons (to a good time with friends and to make friends), cognitive reasons (to enjoy learning, to develop my imagination, to look for new knowledge).</p> | <p>Method of allocation:Not applicable; Purpose sampling method</p> <p>Intervention(s): 3 music programmes including choir, music appreciation and preventive music therapy (PMTTP) sessions.</p> <p>Control: No control</p> <p>Sample sizes: 83 older people. choir: 52; Music appreciation: 19; Preventive music therapy 19</p> <p>Assessed for eligibility: Yes Randomised: Not applicable</p> <p>Baseline comparisons: Not applicable</p> <p>Study power: Not powered</p> <p>Intervention delivery: Choir: weekly (recreational).</p> <p>Music appreciation: weekly (educational).</p> <p>Preventive music therapy (PMTTP): weekly to work on functional skills for physical, cognitive, and social-emotional aspects. All delivered by music professionals.</p> <p>Target group: healthy older people</p> | <p>Mental wellbeing measures:</p> <p>Bespoke questionnaire of (range 0-4) perceptions of change</p> <p>Lawton's life satisfaction scale (PGC).</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>The Yesavage depression Scale</p> <p>Follow-up periods:</p> <p>9 months</p> <p>Method of analysis:</p> <p>Quantitative analyses at pretest and posttest.</p> | <p>Wellbeing results</p> <p>Using the bespoke questionnaire there were participants in the three groups reported: feeling more useful: Choir 2.81, Music appreciation: 2.17, PMTP:3</p> <p>Feeling more optimistic: Choir 2.81, Music appreciation 2.4, PMTP 3.25.</p> <p>Feeling satisfied with myself: Choir 2.81, Music appreciation 2.4, PMTP 3.25. There were no significant differences between groups.</p> <p>New friendships: choir 3.03, music appreciation 3.2, PMTP 3.27.</p> <p>Life satisfaction increased pre and posttest: 42.30 vs. 43.84 (no significance reported).</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>27 people did not return questionnaires at post-test. =27/83 (32.5%)</p> | <p>Limitations (author):</p> <p>Larger sample needed, semi-structured interviews should be added in the future to capture more subtle emotional aspects.</p> <p>Limitations (review team):</p> <p>Uncontrolled relatively small sample study . Unclear how change questionnaire was developed and whether validated.</p> <p>Evidence gaps:</p> <p>Funding resources:</p> <p>It was supported by a grant from Obra Social Caixa DE Sabadell.</p> <p>Applicable to UK:Potentially relevant</p> |

| Travers et al 2011 | | | | | |
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| <p>First author and year:</p> <p>Travers 2011</p> <p>Country of study:</p> <p>Australia</p> <p>Aim of study:</p> <p>To evaluate the impact of a radio programme on older listeners mood, loneliness and quality of life</p> <p>Study design:</p> <p>Uncontrolled before and after study</p> <p>Quality score: -</p> <p>External validity score: -</p> | <p>Setting: Individuals homes or elsewhere listening to radio programme broadcast by Brisbane community radio station .Accessible via internet or custom built radio.</p> <p>Participants: Community-dwelling older people as well as residents of care facilities. 61% lived in their own homes. Mean age 79.9; 71% female. 25% visually impaired.</p> <p>Inclusion: Participant aged 60 years or older who agreed to listen to Silver Memories for an hour a day for three month.</p> <p>Exclusion (reasons listed): Profoundly deaf, severe dementia (Mini Mental State Examination <14) or unable to speak or comprehend English.</p> <p>Motivation/ referral/ payment: All participants received few radio for trial.Flyers advertising programme widely distributed through community groups, social organisations, local community. Individual facilities, respite services and community organisations also approached directly to invite participation from their residents/members.</p> | <p>Method of allocation:Not applicable</p> <p>Intervention(s): ‘Silver Memories’ a radio service with the specific aim of addressing social isolation and loneliness among older Australians by broadcasting music (primarily), serials and other segments of radio programs that were popular when they grew up – the 1920–1950s.</p> <p>Control: None</p> <p>Sample sizes: Assessed for eligibility: See inclusion criteria</p> <p>Baseline data: 154 participants enrolled</p> <p>Baseline comparisons: Not applicable</p> <p>Study power: Not applicable</p> <p>Intervention delivery: Broadcast every day for 3 months – minimum of 1 hour listening per day required.</p> <p>Target group: Older people without severe dementia</p> | <p>Mental wellbeing measures:</p> <p>A single-question item was used to measure loneliness: ‘How often do you feel lonely?’ Answers to this question ranged from always to never, i.e. (1) I always feel lonely, (2) I often feel lonely, (3) I sometimes (occasionally) feel lonely or (4) I never feel lonely</p> <p>Independence measures: None</p> <p>Other measures: The quality of life – Alzheimer’s disease (QOL-AD; Logsdon, Gibbons, McCurry, & Teri, 1999) scale for community-dwelling residents’ and QOL-AD for use in nursing homes. Geriatric Depression Scale-5 (GDS-5; Hoyl et al., 1999) . Satisfaction with Silver Memories</p> <p>Follow-up periods:</p> <p>3 months</p> <p>Method of analysis: Non-parametric test (Wilcoxon signed-rank test) was used to analyse the responses to the loneliness question (non-normally distributed data) and compare baseline to follow-up scores on this measure.</p> | <p>Wellbeing results</p> <p>No change on the loneliness question outcomes ($Z=1.27$, $p=0.2$).</p> <p>Other results</p> <p>It should be noted that Quality of Life scores and Geriatric Depression Scale scores improved from baseline to follow up. Participants satisfied generally as well.</p> <p>Attrition:</p> <p>Intervention group: 41/154=26%</p> | <p>Limitations (author):</p> <p>Relatively low level of loneliness and very low level of social isolation among participants in this study may have left little room for change and it is certainly possible that a different result would be achieved in a more lonely, socially isolated group of older people.</p> <p>Single question measure of loneliness perhaps not sensitive to detect change</p> <p>Limitations (review team):</p> <p>Very little empirical data on social isolation and loneliness presented; quality of life measures may include specific mental wellbeing measures but not reported. Mixed population and unable to determine whether differences in impact based on health state etc.</p> <p>Evidence gaps: See limitations above</p> <p>Funding resources: JO & JR Wicking Trust</p> <p>Applicable to UK?: Yes</p> |

| Won et al, 2008 | | | | | | |
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| First author and year: Won 2008 | Setting: Offered in a variety of community context venues throughout western Washington state, US, such as senior centres, senior apartments, church halls, and public libraries | Method of allocation: Not applicable | Mental wellbeing measures: Psychological well-being: The mental health index-5 (MHI-5) (Berwick et al., 1991) | Wellbeing results | Limitations (author): | |
| Country of study: US | Participants: Adult informal caregivers to frail older adults (half of the sample was 65 years or older; 42 % spouse of the care recipient; 91% were female) | Intervention(s): The Powerful Tools for Caregiving Programme (PTC) . 6 weekly sessions | Independence measures: Not applicable | Only 42 of 188 caregivers who completed the programme were over the age of 65. Psychological wellbeing on the MHI-5 scale improved significantly in these caregivers from 9.2 +/- 2.0 S.D to 10.3 +/- 2.0 S.D P<0.001. | No control group | |
| Aim of study: To examine the impact on caregivers of participation in a self-care skill-building, self-efficacy enhancing, community-based programme | Inclusion: Family caregivers to frail older adults | Control: No control group | Other measures: Health-risk behaviours (i.e. 1) putting off going to the doctor, 2) failing to stay in bed when ill, 3) postponing getting regular check ups or exams, 4) cancelling or missing medical appointments, 5) failing to get enough rest, 6) taking medications improperly, 7) failing to get enough exercise, 8) eating poorly, and 9) putting off recreational activities you enjoy) | It can be noted that caregivers aged 65+ had less improvement in psychological well-being than the younger subgroup (mean score change = +1.1 points vs. +1.9 points; Mann Whitney U P=0.008) | Limitations (review team): Heterogeneous group of caregivers and only minority above 65. | |
| Study design: Uncontrolled before and after study | Exclusion (reasons listed): Not reported | Sample sizes: Assessed for eligibility: N=208 Randomised: Not applicable Baseline data: N=165 | Self-care: Time spent on physical exercise and stress management or relaxation techniques | Independence results Not applicable | Evidence gaps: RCTs needed that directly measure health status and health care utilization in order to provide unequivocal evidence for the efficacy of PTC on these outcomes | |
| Quality score: - | Motivation/ referral/ payment: Family caregivers joined PTC workshops by responding to announcements at senior centres and in community newspapers or at the recommendation of senior centre social workers | Baseline comparisons: Not applicable | Follow-up periods: Pre- and post-intervention | Attrition: Participants: 47/165 (28 %) | Funding resources: The Washington state Aging and Adult Services Administration provided financial support for the program | |
| External validity score: - | | Study power: Not powered to achieve statistical significance | Method of analysis: Student t-test or Mann- Whitney U test were used (for data not normally distributed) for continuous variables and chi-square tests for categorical data. Change from baseline (pre test to post test) assessed using the Wilcoxon Signed Rank test for continuous variables and McNemar's test for matched pairs for categorical variables. Multivariate linear regression analysis was used to identify independent correlates of change in the measured outcomes | Sessions: 58 of 118 participants (49%) attended all six sessions | Applicable to UK? Yes | |
| | | Intervention delivery: See setting | | | | |
| | | Target group: Adult informal caregivers of frail older adults | | | | |

Table for Evidence Statements 2.1 to 2.4

| Basran et al 2012 | | | | | |
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| <p>First author and year: Basran et al 2012</p> <p>Country of study: Canada</p> <p>Aim of study: To evaluate the long term impact on health care professional attitudes of a Senior Mentoring Programme – an intergenerational educational intervention aimed at increasing student health care professionals knowledge of older people and the ageing process; improving attitudes toward, comfort with, and respect of older persons; and enhancing the skills required to work with older adults, such as assessment, listening, and communication skills</p> <p>Study design: Uncontrolled before and after study</p> <p>Quality score: -</p> <p>External validity score:</p> | <p>Setting: University of Saskatchewan Medical School.</p> <p>Participants: 184 medical students. Interprofessional teams of three to four students from medicine, pharmacy, nutrition, nursing and social work were partnered with 54 older adult volunteers (“senior partners”) recruited from a older persons housing complex.</p> <p>Inclusion: Mandatory participation by all medical students at the university, other than nursing students for whom the intervention is voluntary.</p> <p>Exclusion (reasons listed): No exclusion criteria applied</p> <p>Motivation/ referral/ payment: Mandatory for most students, with academic credits available to nursing students to encourage their voluntary participation.</p> | <p>Method of allocation: Purposive sampling method</p> <p>Intervention(s): Longitudinal Elderly Person Shadowing (LEPS) – senior mentoring programme.</p> <p>Control: No control</p> <p>Sample sizes: Randomised: Not applicable</p> <p>Baseline comparisons: Not applicable</p> <p>Study power: Not powered to achieve statistical significance</p> <p>Intervention delivery: 3-4 medical students paired with a community dwelling healthy older person for four meetings over the autumn academic term. Students also keep reflective diaries and participate in two large-group interprofessional meetings designed to integrate learning and allow an</p> | <p>Mental wellbeing measures: Not applicable</p> <p>Independence measures: Not applicable</p> <p>Other measures: Polizzi’s Aging Semantic Differential; Interprofessional Education Perception Scale; Student self rating of impact on knowledge of geriatrics, interprofessional teamwork, resources for older people, and ability to communicate with older people on a scale of 1 to 5, with higher scores reflecting more positive perceptions. Students were also asked how beneficial they found various aspects of LEPS, from 1 (not at all beneficial) to 6 (very beneficial).</p> <p>Follow-up periods: One year</p> <p>Method of analysis: The evaluation used quantitative and qualitative methods: surveys and focus groups with data collected pre programme, at the end of the</p> | <p>Attitudinal results After the programme student attitudes towards a 80 year old man and 80 year old woman were found to have improved significantly with Polizzi’s Aging Semantic Differential Scores reducing (which indicates improvement). Post test scores for the 80 year old man were 66.54 (SD 19.27) compared with 78.71 pre-intervention ($p < 0.01$); for the woman scores were 56.61 (SD 18.87) and 69.47 (SD 15.06) $p < 0.01$. Effect sizes were large with partial $\eta^2 = .28$ and $.30$ for an 80 year old man and woman respectively.</p> <p>Paired samples t-tests conducted with Polizzi scores collected from the 2009 cohort at one-year follow-up found that though attitudes deteriorated between posttest and one year follow-up, follow-up scores were not significantly different from posttest scores for either an 80 year-old man, $t(31) = -0.48$, $p = .34$, or an 80-year-old woman, $t(31) = -0.96$, $p = 0.64$.</p> <p>Paired samples t-tests comparing the</p> | <p>Limitations (author): Lack of randomised controlled trial. Small sample size meant that some differences in effectiveness between different medical professional groups may not have been detected. Insufficient numbers of social workers participated in the study.</p> <p>The follow up response rate of 63.7% is lower than the recommended follow up response rate of 70% to 80% in these programmes.</p> <p>Limitations (review team): Uncontrolled relatively small sample study</p> <p>Evidence gaps: Need for longer term larger scale follow up studies where intervention a formal part of medical school curriculum. Will help also to identify whether different components of programmes are more or less effective.</p> <p>Funding resources:</p> |

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| + | | <p>opportunity to share their insights about their senior partners.</p> <p>Students met with their assigned senior partner 4 times in the autumn term using guidelines provided by faculty to stimulate discussion. In Meeting 1, which occurred during the program's orientation dinner, students collected a general life history from their older partner. The theme for Meeting 2 was "Living Situations and Our Changing World"; during this meeting, students asked their older partner about their living situation, significant life events, changes in the world over their life span, and knowledge of available community resources for seniors. In Meeting 3, students reviewed their older partners' knowledge about their education, nutrition and physical activities.</p> <p>The final meeting between students and their older partner was during the program's wrap-up dinner and social event, which provided an opportunity for students and senior partners to interact in an unstructured, informal manner and further develop their relationships.</p> <p>Target group:</p> <p>Medical students</p> | <p>intervention programme and 12 months later.</p> | <p>pretest scores with the one-year follow-up scores found no significant difference for an 80-year-old man, $t(32) = 1.45$, $p = 0.16$ but did find a significant difference for an 80-year-old woman, $t(33) = 2.67$, $p = 0.01$.</p> <p>18/28 students in 2008, 40/68 in 2009 and 26/20 in 2010 agreed or strongly agreed that the programme had better helped them to communicate with older people.</p> <p>Focus group work indicated that "Many students felt participating in LEPS increased their awareness of myths and helped reduce the stereotypes they held about older adults"</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>Of the 184 medical students who participated 141 completed post test surveys but only 44.3% completed one year follow up surveys.</p> | <p>None reported</p> <p>Applicable to UK?</p> <p>Yes</p> |
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| Bernard et al., 2011 | | | | | |
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| <p>First author and year:</p> <p>Bernard 2011</p> <p>Country of study: Canada</p> <p>Aim of study:</p> <p>To evaluate a intergenerational telementoring program and its effects on social interaction</p> <p>Study design:</p> <p>Exploratory uncontrolled before and after study, applying both quantitative and qualitative analyses</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>-</p> | <p>Setting: The homes of telementors</p> <p>Participants: Older adults aged 70±7 years (range: 59-82) residing in Ottawa, Canada; Young people (9 students, 9 unemployed youth) residing in Paris, France</p> <p>Inclusion:</p> <p>Eighteen senior volunteer candidates were recruited as telementors All exhibited some bilingual skills (French/English), and were natives of the other language</p> <p>Exclusion (reasons listed):</p> <p>None</p> <p>Motivation/ referral/ payment:</p> <p>The senior participants were recruited in the Ottawa-Carleton area in a seniors club, as well as residents of a long term care centre Some the individuals had participated in previous activities of intergenerational video-conferencing group sessions; interested participants enrolled at the end of an introductory presentation</p> | <p>Method of allocation: Not applicable</p> <p>Intervention(s):</p> <p>10 weekly, 1-hour, telementoring sessions were offered to the participants.</p> <p>Control: No control</p> <p>Sample sizes: Assessed for eligibility: Not applicable</p> <p>Randomised: Not applicable</p> <p>Baseline data: N=18 (Older adults), N= 18 (young people)</p> <p>Baseline comparisons: No comparisons described</p> <p>Study power: Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>The PACE 2000 International Foundation delivered the intervention. Training was provided.</p> <p>Target group:</p> <p>Older adults and young people interested in intergenerational and intercultural interaction</p> | <p>Mental wellbeing measures:</p> <p>Behaviour changes in self-confidence, self-expression, enjoyment and confidence in carrying out a conversation in English, and self-efficacy in overcoming barriers to pronunciation and communication. Social relationships (structural or functional aspects)</p> <p>Independence measures: Not applicable</p> <p>Other measures:Basic demographic data on background education, preferred leisure activities, existing language skills and computer literacy</p> <p>Follow-up periods: Pre- and post programme questionnaires and/or direct observation data recorded by the respective intergenerational coordinators after each session.</p> <p>Method of analysis:</p> <p>The t-test and Chi squared analyses were performed, along with observations and interview-based qualitative analyses</p> | <p>Wellbeing results: Older adults, exhibited higher motivation and compliance rates compared to unemployed youth. All participants (youth and seniors) highly valued the program (average rating over 80%), particularly its inter-cultural aspects as well as the relationships they developed. Positive behavioural shifts were observed after only 2 to 4 sessions. No significance levels reported, only based on descriptive data</p> <p>Independence results: Not applicable</p> <p>Attrition: Participants: 2/18 (11 %, older adults)</p> <p>Sessions: Of a total of 180 sessions planned for an evaluation period of ten weeks (90 sessions for each group), only 98 sessions (54%) were completed</p> | <p>Limitations (author):</p> <p>Small sample size</p> <p>Limitations (review team):</p> <p>No validated measurements on mental wellbeing or social relationships</p> <p>No control design</p> <p>Evidence gaps:</p> <p>Further research on how videoconference based telementoring may function as a tool for a new field of medical research, aiming at understanding how social relationships develop and also have an impact on the risk of health problems</p> <p>Funding resources:</p> <p>New Horizons for Seniors, Human Resources and Skills Development Canada; Youth Canada Works; The Ontario Trillium Foundation; E.E. Baulieu, MD, PhD, President of the Institut pour la Longévité et le Vieillessement; and Catherine Peyge, Mayor of the City of Bobigny, France.</p> <p>Applicable to UK?</p> <p>Yes</p> |

| Cook at al 2013 | | | | | |
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| <p>First author and year:</p> <p>Cook et al 2013</p> <p>Country of study: UK</p> <p>Aim of study: To assess impacts on the health and wellbeing of older volunteers keeping hens and taking part in hen-related activities to support older people in the community and in care homes.</p> <p>Study design:</p> <p>Uncontrolled before and after study within a realist evaluation framework.</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>-</p> | <p>Setting: A pilot community site in north-east England.</p> <p>Participants: The mean age of the volunteers was 73.89 ± 13.95. Fourteen of the volunteers were men and 16 women. Community dwelling.</p> <p>Inclusion: Community-dwelling older adults residing in the study region</p> <p>Exclusion (reasons listed): Not listed</p> <p>Motivation/ referral/ payment: Not stated</p> | <p>Method of allocation: Not applicable</p> <p>Intervention(s): To reduce isolation and improve the health and wellbeing of 30 older people, specifically older men through helping them establish hen houses in care settings and improve their skills and confidence in delivering activities with less able older people, friends/relatives, care staff/managers and school children.</p> <p>Control: None</p> <p>Sample sizes:</p> <p>Assessed for eligibility:</p> <p>Randomised: Not applicable</p> <p>Baseline data: 30 volunteers.</p> <p>Baseline comparisons: Not applicable</p> <p>Study power: Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>Target group: Older adults</p> | <p>Mental wellbeing measures: Warwick-Edinburgh Mental Well-being scale (WEMWEBS)</p> <p>De Jong Gierveld Loneliness Scale</p> <p>Independence measures: Not applicable</p> <p>Other measures: Geriatric Depression Scale (GDS).</p> <p>Focus group interviews</p> <p>Follow-up periods: Measurements pre and post intervention (9-month time period)</p> <p>Method of analysis: A Wilcoxon signed rank test for paired data was used for the statistical analysis.</p> | <p>Wellbeing results</p> <p>The analysis of WEMWBS baseline and follow-up scores for the volunteers indicated that there was a significant increase in the scores ($p < 0.000$) median 41.0 to median 53.0 suggesting that there were improvements in mental well-being in the study population.</p> <p>Analysis of the total scores for De Jong Gierveld Loneliness Scale median 5.0 to median 4.0 indicated that there was no significant difference between scores attained at baseline and follow up ($p < 0.281$).</p> <p>Independence results Not applicable</p> <p>Attrition: 6/30 = 20%</p> | <p>Limitations (author): None stated</p> <p>Limitations (review team): Small sample size, although volunteers community dwelling 18 had long standing health problems and some needed social care support.</p> <p>Although the intervention was intended to reach men, actually the majority of volunteers were women.</p> <p>Evidence gaps:</p> <p>Funding resources: Big :Lottery Silver Dreams Fund</p> <p>Applicable to UK? Yes, implemented in UK context</p> |

de Souza et al., 2007

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| <p>First author and year: De Souza 2007</p> <p>Country of study: Brazil</p> <p>Aim of study: To evaluate the effect of an intergenerational intervention involving school students and elders</p> <p>Study design: RCT</p> <p>Quality score: ++</p> <p>External validity score: +</p> | <p>Setting: Ceilandia, one of the satellite cities of Brasilia</p> <p>Participants: Community-dwelling older adults (60 years and over) and students (age range 12-18 years)</p> <p>Inclusion: Older community-dwelling older adults (60+) living in the school catchment area</p> <p>Exclusion (reasons listed): Individuals already participating in reminiscence programmes, severe alcoholism, severe speech impairment, severe cognitive impairment, or being bedridden</p> <p>Motivation/ referral/ payment: None reported</p> | <p>Method of allocation: A three stage sampling design was used to recruit participants; The primary unit, one of the secondary schools of Ceilandia, was chosen purposively based on the number of students in the seventh and eighth grades and the willingness of its head teacher to co-operate with the study. All the other units were randomly selected using a random numbers table</p> <p>Intervention(s): A 4-month programme of intergenerational small group-based activities in which the elders shared their memories with the students. The sessions were facilitated by seven teachers from the school and a nurse from the neighbouring health centre. Sessions of approximately 2 h were held once a week at school during class time</p> <p>Control: No-intervention control</p> <p>Sample sizes: 266 (older adults) Randomised: Intervention (older adults): 149, Control (older adults): 117. Baseline data: Intervention (older adults): 149, Control (older adults): 117</p> <p>Baseline comparisons: 66 % of the intervention group and 81% of the control group reported that their income was insufficient to meet their expenses</p> <p>Study power: Not powered to achieve statistical</p> | <p>Mental wellbeing measures: Cognitive components of social capital, including questions on trust and reciprocity: The American Social General Social Survey (Kawachi, 1999) and the health survey for England (Bajekal & Purdon, 2001) Questions on family relationships</p> <p>Independence measures: Not applicable</p> <p>Other measures: Self-rated health: The Brazilian Old Age Scale (Veras, 1992) Basic socio-demographic measurements</p> <p>Follow-up periods: Pre and post intervention</p> <p>Method of analysis: Logistic regression analyses Intention to Treat (ITT)-analyses applied</p> | <p>Wellbeing results: For older people: Those in the intervention group were nearly three times as likely as those in the control group to report that “all or most neighbours help each other” (OR 2.27, CI 1.249–4.131, p = 0.007) and “all or most people are honest” (rather than “few or none”) (OR 2.50, CI 1.26–4.93, p = 0.008)</p> <p>The intervention group were significantly more likely to report that their family relationships were good or very good (OR 2.61, CI 1/4 1.21–5.61, p 1/4 0.014)</p> <p>Active participants were significantly more likely than controls to report an improvement in family relationships (OR 3.79, CI 1.07–13.46, p= 0.039).</p> <p>Independence results Not applicable</p> <p>Attrition: Older adults: 29/ 266 (11 %)</p> | <p>Limitations (author): Low number of older people in the intervention group who actually participated in the activities. Limited generalisability of results. Using measures taken from English and American questionnaires; may not have been appropriate for the population included in the study. The clustering design of the sampling method</p> <p>Limitations (review team): Dichotomisation of variables</p> <p>Evidence gaps: More research needed on promotion of social capital. Conceptual and methodological work is needed to refine and develop appropriate designs for studies examining social capital. Alternative instruments for social capital in low-income countries need to be developed and validated.</p> <p>Funding resources: CAPES, BEX 1213/99-7 The UK Department for International Development Knowledge Programme</p> <p>Applicable to UK? The intervention concept yes, but the generalisability of the outcomes may be limited due to the delivery context</p> |
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| | | significance Intervention delivery: The intervention was facilitated by teachers, as well as a nurse from the neighbouring health centre Target group: Residents of the school district area | | | |
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| Fujiwara et al. 2009 | | | | | | |
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| <p>First author and year: Fujiwara et al. 2009</p> <p>Country of study: Japan</p> <p>Aim of study: To examine the effects of the REPRINTS intervention on senior volunteers' physical health, subjective and psychological health, social participation, social network, social support, and their cognitive functions.</p> <p>Study design: Quasi-experimental study</p> <p>Quality score: +</p> <p>External validity score: -</p> | <p>Setting: 6 public elementary schools, 3 kindergartens, and 6 child care centres in 3 areas: Chuo-Ward in central Tokyo, Tama-Ward in Kawasaki City in Kanagawa Prefecture, suburb of Tokyo, and Nagahama City in Shiga Prefecture.</p> <p>Participants:</p> <p>The average age of the participants was 68 years.</p> <p>Inclusion: Not specified although the participants were relatively healthy and independent.</p> <p>Exclusion (reasons listed: Collagen disease.</p> <p>Motivation/ referral/ payment:</p> <p>Participants were recruited through community newspapers, specially organised events, and word-of-mouth. The participants in the control group were recruited from various kinds of social activity clubs with adults other than REPRINTS.</p> | <p>Method of allocation: No randomised allocation reported</p> <p>Intervention(s): REPRINTS (Research of Productivity by Intergenerational Sympathy) Program designed to educate and engage senior volunteers in picture book reading to young and school-aged children. First the intervention group attended 3-month weekly training sessions .</p> <p>Control: Engaged in conventional social activities</p> <p>Sample sizes: 67 intervention group; 74 control group. Assessed for eligibility: 76 people applied for participation</p> <p>Randomised: Not applicable</p> <p>Baseline comparisons:</p> <p>No differences in age and gender. Volunteers were significantly more likely not to have grandchildren and to have more years of education.</p> <p>Study power: Not reported</p> <p>Intervention delivery: Volunteers divided into groups of 6-10 volunteers to visit 6 elementary schools, 3 kindergartens, and 6 after school care centres once a week or every two weeks.</p> <p>Target group: Older people living in community</p> | <p>Mental wellbeing measures: None</p> <p>Independence measures: Social activity was assessed by a social activity checklist developed for self-evaluation of social activity.</p> <p>Social network and social support: Social networks were assessed according to the amount of daily contact with individuals fitting into four different types of relations: relatives, business acquaintances, neighbours, and others. Social support was measured by a scale of four items developed to measure provided social support.</p> <p>Other measures:</p> <p>Self-rated health.. Mental health status assessed with Geriatric Depression Scale (GDS). 1</p> <p>Follow-up periods:</p> <p>First follow-up: 9 months after the collection of baseline data;</p> <p>Second follow-up: 21 months after the baseline.</p> <p>Method of analysis:</p> <p>ANOVA; Chi-square; General linear models.</p> | <p>Independence: 56 volunteers who were active in the programme for more than nine months were significantly more motivated to continue participation in order to make new friendships compared to the 11 volunteers who withdrew from the programme before nine months (67.9% versus 27.3%, $p = 0.019$). There were no significant differences between volunteers and control group (N=56) in social activities or in providing social support to other family members.</p> <p>At nine month follow up no differences in frequency of non-family contacts between volunteers and controls was seen except for contacts with children which increased from a mean of 1.6 (between less than once a month and a few times per month) (± 1.7 s.d) to 3.3 (between one and two times per week) (± 1.1 s.d) versus 1.6 (± 1.8 s.d) to 1.4 (± 1.5 s.d) resulting in a significant difference between volunteers and controls ($p < 0.001$).</p> <p>At 21 month follow up for 37 volunteers still in the programme versus 60 controls, the frequency of interaction with children continued to increase significantly ($p < 0.001$) (precise figures not reported – approximate values: 3.8 versus 1.7).</p> <p>Attrition: Intervention group = 11/67 (16.4%); Control group = 14/74 (18.9%).</p> | <p>Limitations (author): Even though the participants were healthy elderly, a longer follow-up would needed to fully account for significantly higher scores on some dimensions between the intensive volunteers group and control group during the 21 months period.</p> <p>Limitations (review team): No randomised allocation to the intervention and control group.</p> <p>Evidence gaps: Long-term follow-up studies with larger sample sizes.</p> <p>Funding resources: Grants-in-aid from Comprehensive Research on Aging and Health, Ministry of Health, Welfare, and Labour, Japan; Nippon Life Insurance Foundation; and Mitsui Sumitomo Insurance Welfare Foundation.</p> <p>Applicable to UK?</p> <p>Yes</p> | |

| Hernandez 2008 | | | | | |
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| <p>First author and year:</p> <p>Hernandez, 2008</p> <p>Country of study:</p> <p>Spain</p> <p>Aim of study:</p> <p>To explore the effects of an intergenerational service-learning programme with university students and slightly depress older people</p> <p>Study design:</p> <p>Quasi-experimental study</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>-</p> | <p>Setting: community</p> <p>Participants:</p> <p>Slightly depressed older people with a mean age of 75 years old and university students studying for a degree in sport and exercise science at the University of Leon, Spain.</p> <p>Inclusion:</p> <p>Inclusion criteria were older people living alone, over 65 and over, average to low income, 8 years of schooling, complaint of slight depression, and a core of no more than 18 on the Yesavage Depression Scale (Yesavage, 1983).</p> <p>Exclusion (reasons listed):</p> <p>People with severe mobility difficulties (need of a walking stick for standing) and/or under medication for depression</p> | <p>Method of allocation:</p> <p>Not applicable</p> <p>Intervention(s):</p> <p>32 interactive recreational activities sessions (talks, excursions, cultural events) between the students and the older adults on a weekly basis in the San Andres Local Council Social Centres</p> <p>Control:</p> <p>University students in the control group: 100</p> <p>Older adults in the control group: 67</p> <p>Sample sizes:</p> <p>179 university students</p> <p>101 older people</p> | <p>Mental wellbeing measures:</p> <p>Not applicable</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other (attitudinal) measures:</p> <p>The questionnaire for negative old age stereotypes (Montorio & Izal, 1991)</p> <p>Follow-up periods:</p> <p>32 weeks</p> <p>Method of analysis:</p> <p>Simple descriptive analyses,</p> | <p>Nor applicable</p> <p>Attitudinal results:</p> <p>In the post-test, young people with older people showed that 4% strongly agree, 36% agree, 48% disagree, and 12% strongly disagree.</p> <p>In the control group, 4% strongly agree with stereotypes, 36% agree, 46% disagree, and 14% strongly disagree.</p> <p>The group of the young people that interacted with older people tended to reduce their stereotypes. However, the young people who did not interact with the older adults show also a tendency towards moderating their stereotypes.</p> | <p>Limitations (author):</p> <p>The interaction was based on a deficiency (negative stereotype).</p> <p>Limitations (review team):</p> <p>Statistical significance was not mentioned</p> <p>Evidence gaps:</p> <p>Exploring factors for how to reduce ageism</p> <p>Funding resources:</p> <p>None reported</p> <p>Applicable to UK?</p> |

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| | <p>Motivation/ referral/ payment:</p> <p>University students studying for a degree in sport and exercise science</p> | <p>Assessed for eligibility:</p> <p>Yes</p> <p>Randomised:</p> <p>Not applicable</p> <p>Baseline data:</p> <p>Baseline comparisons:</p> <p>Young people with older people: in the pre-test, strongly agree (6%), agree (39%), disagree (44%), and strongly disagree (11%).</p> <p>Young people in control group: in the pre-test, strongly agree (6%), agree (31%), disagree (43%), and strongly disagree (20%).</p> <p>Study power: Not reported</p> <p>Intervention delivery:</p> <p>The intergenerational interaction</p> | <p>expressed as percentage</p> | <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>Not reported</p> | <p>Yes</p> |
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| Herrmann et al., 2005 | | | | | |
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| First author and year: Herrmann 2005 | Setting: Schools and older persons centres | Method of allocation: Not applicable | Mental wellbeing measures: | Wellbeing results | Limitations (author): |
| Country of study: US | Participants: 36 retired senior citizen volunteers aged 60 to 81 participated as trainers in the project 18 trainers were assigned to teach a violence/anger-reduction curriculum, and 18 were assigned to teach a vocational-education and career-development curriculum. The groups of students consisted of 8 to 12 sixth grade students. | Intervention(s): 1. A violence-anger-reduction intervention supervised by trained senior volunteers. 2. Vocational-education and career-development intervention supervised by trained senior volunteers. Duration: Twice per week for 8 weeks | Psychosocial wellbeing: The Measures of Psychosocial Development (MPD, Hawley, 1988) scales. Only four of the scales were used including generativity versus stagnation scales – generativity (a positive form of psychosocial development) | Participation in intergenerational programming appeared to influence generativity. Volunteers engaged in violence/anger-reduction curriculum demonstrated significantly higher scores on the generativity component of psychosocial health measurement at post test compared to non-participants (F (1, 54)=10.37, p<0.005, n ² =0.16, large effect size) This change was not found in the other group of volunteer trainers | Heterogeneous group with varying psychosocial health status between the group of volunteers |
| Aim of study: To determine if a group of senior citizen volunteers participating in an intergenerational program with students would show changes in their psychosocial wellbeing as a result of their participation Also to determine if the specific program content would influence the direction or way in which psychosocial change occurred | Inclusion: Older adults interested in participating in the programme | Sample sizes: Assessed for eligibility: N=66 Randomised: Not applicable | Independence measures: Not applicable | Independence results Not applicable | Limitations (review team): Not RCT design |
| Study design: Quasi-experimental | Exclusion (reasons listed): Not reported | Baseline comparisons: The seniors who were trainers were already more healthy than the non-trainers in terms of psychosocial health status | Other measures: Socio-demographic characteristics | Attrition: Older adults: 11/66 (17 %) | Evidence gaps: More research applying measures on psychological wellbeing when evaluating intergenerational programmes. More research comparing participation in different types of intergenerational programmes. |
| Quality score: + | Motivation/ referral/ payment: Senior trainers were recruited from a large community senior centre. Advertisements were placed in community newspapers, announcements were made on a local cable TV station, and flyers were distributed at a community senior centre asking seniors to volunteer for an “intergenerational project working with community youth”. | Study power: Not powered to achieve statistical significance. | Follow-up periods: pre- and post-intervention measurements | | Funding resources Not reported |
| External validity score: + | | Intervention delivery: Community-based project in collaboration with e.g. schools and senior centres | Method of analysis: Synthesising qualitative interview and quantitative (descriptive) data | | Applicable to UK? Yes |
| | | Target group: Older adults interested in participating in the programme | Method of analysis: One-way MANCOVA with treatment group (trainer versus non-trainer) serving as the independent variable, MPD as the dependent variable and respective pre-test scores as covariates | | |

| Kamei et al 2011 | | | | | |
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| First author and year: Kamei (2011) | Setting: The sessions were held at the St. Luke's College of Nursing, Tokyo, Japan. | Method of allocation: Not reported | Mental wellbeing measures: | Wellbeing results | Limitations (author): |
| Country of study: Japan | Participants: Participants recruited from Chuo-ku - urban community in Tokyo. A group of 14 community dwelling older people (average age 75.6 years), 8 programme volunteers (average age 68.6 years), and 7 school children (average age 9.9 years) took part in the intervention. | Intervention(s): Intergenerational day programme (IDP) consisting of 22 program sessions over 6 months Control: 8 programme volunteers | Medical Outcomes Study 8-Item Short-Form Health Survey: The SF-8 is the eight-domain evaluation of HRQOL with each of the eight items covering a wide range of health indicator related functions. | In terms of health-related quality of life at 3 months and 6 months post programme older adults had significantly improved mental health (F [2.26] = 4.00, p= 0.030). | The participants were a convenience sample in one urban community and the room capacity limited the sample size. Some children's perceptions might have been influenced by the experiences with their grandparents. The participant observation method had some limitations. There were also issues related to the programmes sustainability. |
| Aim of study: To evaluate the effects of the intergenerational interactions between the older adults and children who participated in an intergenerational day programme (IDP). | Inclusion: An eligible convenience sample of seniors, volunteers and primary school children. | Sample sizes: Older people (n = 14), program volunteers (n = 8), and school children (n = 7). Assessed for eligibility: Not reported | Independence measures: | Independence results | Limitations (review team): |
| Study design: Quasi-experiemental | Exclusion (reasons listed): Excluded were 2 older people who were unable to completely respond to the questionnaires; 2 programme volunteers who did not complete the questionnaires; and one child that was absent for 21 weeks. | Randomised: Not applicable | Other measures: Geriatric Depression Scale-15: The GDS-15 has 15 items and a 0–15 point rating scale. Higher scores indicate higher levels of depression. The cut-off score of ≥5 is accepted for the screening of mild, moderate, and severe depression. | Other measures: The older adults group was significantly more satisfied with the intervention than the programme volunteer group at 6 months (t [20] = 3.66; p = 0.002). Older people were found to participate significantly more compared to the programme volunteer's group (M=16.7 SD=4.1 vs. M=6.3 SD=2.9; p<0.001). | Eligibility criteria not clearly defined; lack of standardised measures to assess the participants' satisfaction with the program; only female participants. |
| Quality score: - | Motivation/ referral/ payment: Participants were recruited through posters, brochures, and notices on the website. | Baseline comparisons: Blood pressure, mental status, number of family members living in the participant's home, and fall risk. Study power: Not reported | The level of program satisfaction was assessed with an original questionnaire of one item with an 11 point score ranging from 0 (not at all satisfied) to 10 (very much satisfied). | The score on the 11 point (0-10) program satisfaction scale for the older adult group was significantly higher than that of the program volunteer group at 6 months (t [20] = 3.66, p = 0.002). | Evidence gaps: Not reported |
| External validity score: - | | Intervention delivery: The intervention consisted of weekly 3 hours IDP including intergenerational group activities, such as communication facilitation games and handicrafts. The first half of the sessions was older-adult centred as children were only able to attend the sessions after school. Activities included communication facilitation game programme; quilt work, tapestry-making; playing card games; Japanese poetry (haiku); intergenerational new calligraphy; aromatherapy hand massage and | Two semantic differential scales were used to assess the program outcomes in terms of the changes in the children's perceptions of the older people and their enjoyment of the program. Children could respond through interviews and self-reports. | The children rated older adults highly on the five-point semantic differential scale but their perceptions were not significantly different. | Funding resources: Funded by Shigeo and Megumi Takayama Foundation (2007 onwards) and Meiji Yasuda Kokoro-no Zaidan (2007–2008), Japan. |
| | | | Follow-up periods: 3 and 6 months | Attrition: 12.5% (2 of 16 older adults not able to take part), 12.5% (1 out of 8) | Applicable to UK?: Yes |

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| | | <p>aromatherapy hand cream creation; making photograph frames; singing and “singing” with sign language; and playing games from the seniors’ childhood.</p> <p>At the beginning of each weekly session the nurses assessed older peoples’ physical and mental condition.</p> <p>Target group:</p> <p>Older people and school-aged children</p> | <p>Method of analysis:</p> <p>Thematic analysis of the qualitative data collected through interviews and participant observations.</p> <p>ANOVA repeated measures</p> | <p>children, and 20% (2 out of 10) volunteers.</p> | |
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| Marx 2005 | | | | | |
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| <p>First author and year:</p> <p>Marx, 2005</p> <p>Country of study: USA</p> <p>Aim of study: To examine usefulness of an intergenerational email pen-pals programme and an intergenerational face-to-face visiting programme.</p> <p>Study design: Quasi-experimental study</p> <p>Quality score: -</p> <p>External validity score: -</p> | <p>Setting: Community dwellings</p> <p>Participants: 69 older adults aged 80 to 86 with a mean age of 83 years from a suburban federally subsidized apartment building. The majority of participants were women having graduated from high school.</p> <p>Inclusion: Residents living at a federally subsidised apartment building.</p> <p>Exclusion (reasons listed): No exclusion criteria applied</p> <p>Motivation/ referral/ payment: All residents living in the senior apartment building were invited to attend a group meeting, describing the upcoming intergenerational e-mail and visiting programmes and interested people were recruited at the meeting. In addition, some older adults were recruited by word-of-mouth.</p> | <p>Method of allocation: Not applicable Purpose sampling method</p> <p>Intervention(s): -Intergenerational e-mail pen-pal programme; Intergenerational face-to-face visiting programme; -Participating in both email pen-pal and visiting programmes at the same time</p> <p>Control: Those who self-selected to be controls, not participating in intervention group activities.</p> <p>Sample sizes: Of the 69 older people. 27 enrolled in both the intergenerational e-mail pen-pal and visiting programmes, 11 in the intergenerational e-mail pen-pal program only, 4 in the intergenerational visiting programme only, and 27 seniors participated in neither programme and served as a control group.</p> <p>Assessed for eligibility: Randomised: Non-randomised, participants were given a choice (s) to self-allocate to their preferred group(s).</p> | <p>Mental wellbeing measures: Questionnaire asking "Did you enjoy participating in the intergenerational email pen-pal programme?"</p> <p>Independence measures: Not applicable</p> <p>Other measures: Not applicable.</p> <p>Follow-up periods: 6 months</p> <p>Method of analysis: Chi-squares and analyses of variance.</p> | <p>Wellbeing results: At the post-test after 6 months, 57% of older adults in the email pen-pal programme mentioned they enjoyed the programme and 88% of those took part in the face-to-face visiting programme.</p> <p>Regarding social network outcomes, 26% of those in the email pen-pal programme stated that they would like to continue to contact their pen-pals, while 74% were not interested.</p> <p>Independence results Not applicable</p> <p>Attrition: 12% overall.</p> | <p>Limitations (author): Due to small number of people in the control group, they were excluded from the statistical analyses. The study was not randomised. This study allowed participants to choose the programme that they would like to take part in. Qualitative method should be part of the assessments alongside quantitative analyses.</p> <p>Limitations (review team): Some older adults participated in both programmes but results were not reported for those.</p> <p>Evidence gaps:</p> <p>Funding resources: A Montgomery County Empowerment Grant</p> <p>Applicable to UK? Yes</p> |

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| | | <p>Baseline data:</p> <p>Baseline comparisons: No statistically significant differences between groups for loneliness.</p> <p>Study power: Not powered to achieve statistical significance</p> <p>Intervention delivery: At no cost to the older adults, a computer centre on the ground floor of their apartment building (complete with free tech support) and one to one email tutorial sessions were offered. Sessions lasted from 45 minutes to one hour. The computer centre remained open 24 hours per day.</p> <p>In the visiting programme: a group of 20 elementary school children (7-11 years old) visited on a monthly basis for 8 times. Each month, a reminder flyer was sent to each older people's mailbox 2 days before a visit. Each visit lasted 90 minutes. Activities consisted of a talent show, playing board games, group sing-alongs, solving a crossword puzzle, 1 to 1 interviews of the older people by the children.</p> <p>Target group: older adults living in senior apartment.</p> | | | |
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| Morita et al., 2013 | | | | | |
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| <p>First author and year:</p> <p>Morita 2013</p> <p>Country of study:</p> <p>Japan</p> <p>Aim of study:</p> <p>To determine a desirable interaction style for older adults, brought about by a performance-based intergenerational programme and a social-oriented programme</p> <p>Study design:</p> <p>Uncontrolled before and after study</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>-</p> | <p>Setting:</p> <p>An adult day care centre in Tokyo</p> <p>Participants:</p> <p>Older adults aged 71 to 101 years (mean: 85), 80 % female</p> <p>Inclusion:</p> <p>Healthy older adults living independently</p> <p>Exclusion (reasons listed):</p> <p>Those who required assistance with their daily activities due to symptoms of severe cognitive impairment</p> <p>Motivation/ referral/ payment:</p> <p>Divided into two groups based on their interaction style</p> | <p>Method of allocation: Time-sampling</p> <p>Intervention(s):</p> <p>Intergenerational programmes with preschool children aged 5 to 6 years at an adult day care centre in Tokyo</p> <p>The 25 older participants of intergenerational programs were divided into two groups based on their interaction style: Performance-based intergenerational programme (children sing songs and dance for the older people, n=11) and Social-oriented intergenerational programme (older adults and children play games together, n=14)</p> <p>Control: No control</p> <p>Sample sizes: Assessed for eligibility: N= 25</p> <p>Randomised: Not applicable</p> <p>Baseline data: N=11 (performance-based programme) N=14 (social-oriented programme)</p> <p>Baseline comparisons: There were no significant differences in characteristics between the performance-based and social-oriented programme groups</p> <p>Study power: Not powered to achieve statistical significance</p> <p>Intervention delivery: In an adult day care centre in Tokyo, Japan</p> <p>Target group: Healthy independent older adults</p> | <p>Mental wellbeing measures:</p> <p>Intergenerational conversation</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>Visual attention Facial expression Engagement/behaviour</p> <p>Follow-up periods:</p> <p>One-point measurements only</p> <p>Method of analysis:</p> <p>Based on 5-minute video observations, changes in visual attention, facial expression, engagement/behaviour, and intergenerational conversation between the performance-based and social-oriented programs were compared</p> <p>Pearson's χ^2 test and the Mann-Whitney U test were used</p> | <p>Wellbeing results</p> <p>Constructive behaviour and intergenerational conversation were significantly higher in the social-oriented programme group than the performance-based programme group ($p < 0.001$, no specific comparing figures provided)</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>Not reported</p> | <p>Limitations (author):</p> <p>Cross-sectional research design, comparing a single set of observations of participants in intergenerational programs, the effect of continuity of the programs could not be determined Small sample size</p> <p>No randomisation</p> <p>Limitations (review team):</p> <p>Lacks in detailed reporting Limited mental wellbeing measurements</p> <p>Evidence gaps:</p> <p>Development of new programs which attract the participation of both older adults and children needed</p> <p>Intergenerational programs should be more research-based, and the principles of contact theory (support from authority, common goals, cooperation, equal group status, and opportunity for friendship) are essential</p> <p>Funding resources:</p> <p>This work was supported by JSPS KAKENHI Grant Number 22792257</p> <p>Applicable to UK?</p> <p>Yes</p> |

| Mui et al, 2013 | | | | | |
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| <p>First author and year:</p> <p>Mui, 2013</p> <p>Country of study: USA</p> <p>Aim of study:</p> <p>To evaluate the effect of a pilot programme for older Chinese immigrants on social engagement and social support.</p> <p>Study design:</p> <p>Exploratory uncontrolled before and after study (including survey following intervention).</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>++</p> | <p>Setting:</p> <p>Community senior centre or homes in New York</p> <p>Participants:</p> <p>Older Chinese immigrants with the mean age of 72.1(64-86) and with very low English proficiency. Mostly women (72%), married (89%), born in mainland China (94%). 72% reported their health condition was "fair", 22% good, 6% excellent.</p> <p>Inclusion:</p> <p>Community-dwelling older adults willing to volunteer to help other Chinese immigrants with caregiving burden</p> <p>Exclusion (reasons listed):</p> <p>Not mentioned.</p> <p>Motivation/ referral/ payment:</p> <p>A bilingual flyer with an overview of the programme was distributed at the senior centre. The flyer included information on the programme, the stipend, the 6-month commitment, the telephone support component.</p> <p>Chinese caregivers of ill relatives with unmet needs were identified by the hospital-based social worker and referred to the senior centre social worker for matching with volunteers based on Chinese dialect and</p> | <p>Method of allocation:</p> <p>Not mentioned.</p> <p>Intervention(s):</p> <p>A Phone Angel Programme, designed to address caregiver burden in Chinese immigrant families with additional stresses of linguistic and social isolation.</p> <p>The Phone Angel programme was designed to train volunteers to serve as friendly volunteers for isolated caregivers and provide them emotional and coping skill support in their native language.</p> <p>Training was comprised of 72 hour, intensive training sessions from Nov 2010 to Feb 2011, followed by ongoing training sessions every 3-4 weeks. Volunteers were trained to provide telephone support to caregivers using Mandarin or Cantonese, whichever language the caregiver had the most linguistic comfort with, at least once per week.</p> <p>Control:</p> <p>No-intervention control</p> <p>Sample sizes:</p> <p>19 (older adults)</p> <p>Randomised: not applicable.</p> | <p>Mental wellbeing measures:</p> <p>A focus group and a short questionnaire with closed and open-ended questions.</p> <p>Independence measures:</p> <p>Not applicable.</p> <p>Other measures:</p> <p>Close/open-ended questionnaires for various perceived benefits of volunteering, rating options of "agree" or disagree or worse, same better"</p> <p>Follow-up periods:</p> <p>6 months</p> <p>Method of analysis:</p> <p>Mainly qualitative analyses</p> | <p>Wellbeing results:</p> <p>100% of the volunteers "I feel empowered and happier because I have the opportunity to serve others." And "I have developed a stronger sense of purpose in my life.</p> <p>I feel better about myself (67%)</p> <p>"My spouse and I have become more active in social activities (61%)."</p> <p>"My relationship with my family has improved (72%)."</p> <p>"I have enlarged my social circle of friends (83%)."</p> <p>Independence results</p> <p>Not applicable.</p> <p>Attrition:</p> <p>Older adults: 1/ 19 (5%)</p> | <p>Limitations (author):</p> <p>Future studies looking at older people living alone, with mental health problems, new immigrants etc.</p> <p>Limitations (review team):</p> <p>No control group.</p> <p>Generalisability issues to other ethnic groups</p> <p>Evidence gaps:</p> <p>Funding resources:</p> <p>The Unite Hospital Fund</p> <p>Applicable to UK?</p> <p>Yes, potentially it could be applied to the Chinese immigrant population</p> |

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| | <p>gender.</p> <p>Phone Angel volunteers received a \$50 stipend after the intensive training programme and another \$50 after 6 months of service.</p> <p>Volunteers could call Chinese family caregivers from both the senior centre and their own homes. Calling cards were provided to the Phone Angels so that they did not have to use their own phones, which protected their privacy.</p> | <p>Baseline data:</p> <p>Intervention (older adults): 19</p> <p>Baseline comparisons:</p> <p>Not applicable.</p> <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>Initial training was conducted every 2 weeks but as volunteers gained confidence and a sense of competence in their role as volunteers for caregivers, training was spaced to 2 or 4 weeks apart.</p> <p>Phone Angels were advised to keep calls to 30-60 min in duration and maintain the relationship over the phone rather than suggesting face-to-face contact.</p> <p>Target group:</p> <p>Chinese immigrants with extra burden of caring giving and social isolation, linguistic and cultural barriers.</p> | | | |
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| Power et al (2007) | | | | | |
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| <p>First author and year:</p> <p>Power, 2007</p> <p>Country of study:</p> <p>USA</p> <p>Aim of study: To explore the importance of social participation and wellness through the stories of two older people at an intergenerational community called the Hope Meadows.</p> <p>Study design: Qualitative study</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>-</p> | <p>Setting: 22 acre intentional planned intergenerational neighbourhood where families adopt or foster children.</p> <p>Participants: Two unrelated older adults one man aged 70 and one woman aged 80 who were friends</p> <p>Inclusion:</p> <p>Not stated.</p> <p>Exclusion (reasons listed):</p> <p>No exclusion criteria applied</p> <p>Motivation/ referral/ payment:</p> <p>Older people are required to provide six hours per week of volunteer time and, in return, pay below-market rent for their housing</p> | <p>Method of allocation:</p> <p>Not applicable</p> <p>Intervention(s):</p> <p>Hope Meadows is an intergenerational community. Initially residents at Hope Meadows agreed to adopt 3 or 4 children from the foster care system and they received their housing free and one of parents was paid a salary. Older adults volunteered to provide 6 hours per week and paid rent, which was lower than the market price for their housing. The volunteering activities could vary depending on individuals' capacities such as fixing bikes for children, teaching sewing, cooking and so on.</p> <p>Control: not applicable.</p> <p>Sample sizes: 2</p> <p>Assessed for eligibility: Not applicable.</p> <p>Randomised: not applicable</p> <p>Study power: not applicable</p> | <p>Mental wellbeing measures:</p> <p>Qualitative interviews</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>Not applicable.</p> <p>Follow-up periods:</p> <p>8 years</p> <p>Method of analysis:</p> <p>An interpretive ethnographic framework.</p> | <p>Wellbeing results:</p> <p>They felt joy, happiness when being around with children. They also gave and received help from other neighbours when they needed personal care support and transportation and so on.</p> <p>They increased sense of purpose in life and self-worth through volunteering activities for children and younger generations.</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>One person passed away due to pre-existing physical illnesses.</p> | <p>Limitations (author)</p> <p>Not stated</p> <p>Limitations (review team):</p> <p>Larger sample needed. Transferability issues of the findings in other country contexts.</p> <p>Evidence gaps:</p> <p>Funding resources:</p> <p>Applicable to UK?</p> <p>Probably not. Depends on the housing market's capacity to build such a community and also whether such a location which is specifically set aside for fostering and adopting children would be considered appropriate</p> |

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| <p>First author and year: Scott 2003</p> <p>Country of study: US</p> <p>Aim of study: To evaluate “Young at Heart,” a US programme that places older volunteers in childcare settings, as well as Meals on Wheels volunteers, and other older person volunteers.</p> <p>Study design: Quasi-experimental study</p> <p>Quality score: -</p> <p>External validity score: -</p> | <p>Setting: The research was conducted in 2 large cities in Texas, US. The interviews were mainly conducted in the childcare centres or via telephone</p> <p>Participants:</p> <p>14 Young at Heart volunteers</p> <p>14 Meals on Wheels volunteers</p> <p>49 non-volunteer control group</p> <p>25 miscellaneous volunteers</p> <p>Inclusion: Older adults participating in volunteering activities</p> <p>Exclusion (reasons listed): No exclusion criteria applied</p> <p>Motivation/ referral/ payment: Not reported</p> | <p>Method of allocation: Not applicable</p> <p>Intervention(s): The participants of the study were engaged in one of the following interventions:</p> <ol style="list-style-type: none"> 1. Young at Heart (a programme that places elderly volunteers in childcare settings) 2. Meals on Wheels 3. Other volunteering activities. <p>Control: Non-volunteer control group</p> <p>Sample sizes:</p> <p>Randomised: Not applicable</p> <p>Baseline data: See participants</p> <p>Baseline comparisons: Not applicable</p> <p>Study power: Not powered to achieve statistical significance</p> <p>Target group: Older adults engaged in volunteering activities</p> | <p>Mental wellbeing measures:</p> <p>Generativity: The Loyola Generativity Scale (McAdams & de St. Aubin, 1992)</p> <p>Life Satisfaction: Diener’s brief (five-item) Satisfaction with Life Scale (Pavot & Diener, 1993)</p> <p>Independence measures: Not applicable</p> <p>Other measures:</p> <p>Gender</p> <p>Race/ethnicity</p> <p>Age</p> <p>Marital status</p> <p>Whether they had children</p> <p>Education</p> <p>Retirement status</p> <p>Self-rating of physical health compared to others their age</p> <p>Whether they had grandchildren or</p> | <p>Wellbeing results</p> <p>The four volunteer/non-volunteer groups differed in their levels of generativity, based both on a one-way analysis of variance (ANOVA) for unadjusted means ($F [3, 97] = 5.94, p = .001$) and an analysis of covariance (ANCOVA) for adjusted means ($F [3, 83] = 5.97, p = .001$)</p> <p>In neither analysis did the groups differ on life satisfaction (p values of .227 and .399)</p> <p>Although the Young at Heart volunteers had a relatively high mean level of generativity, conservative Scheffe post hoc contrasts on the unadjusted means found the only significant differences ($p < .05$) to be between the miscellaneous volunteers (who had the highest generativity), on the one hand, and the “Meals” and the non-volunteer groups (who were the two lowest groups on generativity), on the other</p> <p>Independence results</p> | <p>Limitations (author):</p> <p>Small sample size</p> <p>Groups recruited from different cities</p> <p>Cross-sectional design</p> <p>Limitations (review team):</p> <p>Rather descriptive study with limited opportunities to measure impact of the interventions</p> <p>No information on gender breakdown or age</p> <p>Evidence gaps:</p> <p>Future research is needed to examine the ways in which generativity is used to maintain continuity or as a conduit for a changing sense of self in relationship to the larger environment</p> <p>Longitudinal studies of volunteers warranted, starting as they begin their work with an organization</p> <p>This could tell whether volunteers</p> |
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| | | | <p>great-grandchildren</p> <p>Amount of interaction with children below 12 (“talk with, play with, visit . . .”; choices from never to daily)</p> <p>Follow-up periods:</p> <p>Not applicable</p> <p>Method of analysis:</p> <p>Differences between groups and covariance were measured with ANOVA and ANCOVA.</p> | <p>Not applicable</p> <p>Attrition:</p> <p>102 participants were included in the study, but most analyses had an <i>N</i> of 101 due to one respondent, in the non-volunteer group, having extensive missing data</p> | <p>who were high in generativity and placed in a setting that involved guiding or nurturing younger generations tended to remain in their volunteer positions longer (and with greater satisfaction) than less well-matched volunteers (i.e., high-generativity volunteers in a low-generativity setting, or vice-versa)</p> <p>Funding resources:</p> <p>Grant from the Texas Department of Protective and Regulatory Services (TDPRS)</p> <p>Applicable to UK?</p> <p>Yes</p> |
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Table for Evidence Statement 3.1

| Butler et al., 2006 | | | | | |
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| <p>First author and year: Butler 2006</p> <p>Country of study: USA</p> <p>Aim of study: To evaluate the effects of a older person companion programme and to develop an instrument that would allow individual programmes to assess their impact on an ongoing basis</p> <p>Study design: Exploratory study, applying a mixed-method approach</p> <p>Quality score: -</p> <p>External validity score: -</p> | <p>Setting: A federal programme delivered in a very rural county in Maine, USA</p> <p>Participants: Low income older adults: sample of both senior companions and older people supported had age range: 62 to 99, mean age: 78). Senior companions provide companionship and offer assistance to frail community elders</p> <p>Inclusion: None listed</p> <p>Exclusion (reasons listed): None listed</p> <p>Motivation/ referral/ payment:</p> | <p>Method of allocation: Not applicable</p> <p>Intervention(s): Senior companion programme (including social support and assistance provided by older volunteers)</p> <p>Control:No control (but outcomes compared between clients and volunteers)</p> <p>Sample sizes: Assessed for eligibility: No</p> <p>Randomised: Not applicable</p> <p>Baseline data: N=34 (volunteers), N=32 (clients)</p> <p>Baseline comparisons: Cclients were, on average, older (82 vs. 74 years of age, $p < .05$), more likely to be widowed (78.1% vs. 41.2%, $p < .05$) and more likely to live alone (84.4% vs. 58.8%, $p < .05$). No statistically significant difference in educational background.</p> <p>Study power: Not powered to achieve statistical significance</p> <p>Target group: Low-income and frail community-dwelling older adults</p> | <p>Mental wellbeing measures: Social networks: The Lubben's Social Network Scale-Abbreviated (LSNS-A, Lubben & Girona, 2000) Loneliness: The UCLA Loneliness Scale (Russell, 1996)</p> <p>Independence measures: Not applicable</p> <p>Other measures: Socio-demographic characteristics Depression: The Centre for Epidemiological Studies Depression Scale (CES-D, Radloff, 1977) Mood states: The Profile of Mood States (POMS)- Short Form (McNair, Lorr, & Droppleman, 1992) Reach and outcomes of the programme (measured with open-ended questions)</p> <p>Follow-up periods: One-point measurement</p> <p>Method of analysis: Descriptive statistics</p> <p>Transcripts of all open-ended subjected to thematic analysis</p> | <p>Wellbeing results Very limited. Scores on all the social network and loneliness scales were good. For volunteers on the LSNS-A the mean score was 17.4 (no range reported); this is well above scores of 12 or less which would signify greatest risk of very limited social networks. The Senior Companions had a mean UCLA loneliness scale score of 29.1 which is lower than the reported norm of 32-37. The study design does not make it possible to determine whether these high scores can be explained by the intervention</p> <p>Independence results Not applicable</p> <p>Attrition: Not applicable</p> | <p>Limitations (author): Small sample size Redundancy and interrelations among some of the measures (e.g. correlations between depression and mood state scales) No control No repeated measures</p> <p>Limitations (review team): Self-reported measures on mental wellbeing. No baseline data on wellbeing status collected. Also impossible to determine length of exposure to intervention by both volunteers and people being supported.</p> <p>Evidence gaps: More empirical evidence needed on the effects of these kinds of interventions for individuals and communities</p> <p>Funding resources: The John A. Hartford Foundation through the Hartford Geriatric Social Work Scholars Program</p> <p>Applicable to UK? Yes</p> |

| Lawlor et al 2014 | | | | | |
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| <p>First author and year: Lawlor 2014</p> | <p>Setting: The study was set in both urban and rural areas of three counties in the east of the Republic of Ireland</p> | <p>Method of allocation: Block randomisation was conducted and a computer generated random sequence list was used to randomly allocate participants. Group allocation was concealed from both participants and the researchers until after baseline data collection was conducted.</p> | <p>Mental wellbeing measures:</p> <p>Loneliness: the De Jong Gierveld Loneliness Scale (11 item)</p> | <p>Wellbeing results</p> | <p>Limitations (author):</p> |
| <p>Country of study: Ireland</p> | <p>Participants: Community-dwelling older adults (60+), the majority (75%) was female and widowed. Median age 80. 46 healthy volunteers over the age of 55.</p> | <p>Intervention(s): The intervention contained four elements; the recruitment, training and retention of volunteers and home visits to the intervention participants from the volunteers. Each intervention participant was matched with a volunteer. Volunteers visited them for an hour once a week for ten weeks over approximately a three month period</p> | <p>Social networks: The Lubben Social Network Scale</p> | <p>Participants</p> <p>Total scores on the primary outcome measure, the De Jong Gierveld scale, were significantly lower in the intervention group at 3-month follow-up (p=0.003, adjusted for baseline values)</p> | <p>Due to the nature of the intervention it was not possible to blind the participants from their allocation</p> |
| <p>Aim of study: To implement a brief peer visiting programme for community dwelling older adults who experience loneliness and to test the effectiveness of the programme</p> | <p>Inclusion: The following criteria were applied in the selection of participants: Aged over 60 years, community-dwelling, have no significant memory problems, a score of 3 or more on the De Jong Gierveld Loneliness Scale OR answer 'Yes' to the question Item 5 on the CESD scale 'Would you say that much of the time during the past week you felt lonely?' Agree to have a volunteer visiting them in their own home if allocated to the intervention group</p> | <p>Control: Participants in the control group received their usual individualized care from community services. In addition, they received a home visit from a member of the research team to conduct data collection at three data collection time points</p> | <p>Independence measures: Not applicable</p> | <p>This reflected differences between the groups on both the social loneliness subscale (p=0.022) and the emotional loneliness subscale (p=0.015)</p> | <p>Limitations (review team): No detailed reporting on the analysis methods of the effect sizes/ changes as measured for the RCT study</p> |
| <p>Study design: RCT</p> | <p>Exclusion (reasons listed): See criteria listed above</p> | <p>Sample sizes: Assessed for eligibility: N=290</p> | <p>Other measures:</p> <p>Depression and anxiety: The Center for Epidemiologic Studies Depression (CES-D) Scale & Hospital Anxiety and Depression Scale (HADS)</p> | <p>The Lubben social network scale scores did not differ significantly between groups (p=0.065) with higher scores in the intervention group</p> | <p>Study could potentially have been designed to have a control group for volunteers.</p> |
| <p>Quality score: ++</p> | <p>Motivation/ referral/ payment: Potential participants were identified by people working with older people in the community including general practitioners, public health nurses, parish staff, day centre staff, home helps and members of local active retirement groups. Individuals identified were</p> | <p>Randomised: N=100</p> | <p>Cognition: The Montreal Cognitive Assessment Scale (MOCA)</p> | <p>Of the intervention participants that were followed up at three months 30 had sustained a new social connection since the commencement of the study. 25 of the participants continued to receive visits from a volunteer, mostly the original volunteer they were allocated to at the beginning of the study</p> | <p>Evidence gaps: None reported</p> |
| <p>External validity score: ++</p> | | | <p>Self-efficacy, sense of control: CASP 19 (Control, Autonomy, Self-Realisation and Pleasure scale)</p> | <p>Volunteers</p> | <p>Funding resources: Funding received from Ageing Well Network and the Atlantic Philanthropies</p> |
| | | | <p>Follow-up periods: Data were collected from participants in their homes at baseline and at one and three months post intervention using a researcher-administered</p> | <p>There may also be benefits for older volunteers in the trial, with a reduction in loneliness measured</p> | <p>Applicable to UK? Yes</p> |

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| | <p>asked if they were interested in participating in the study and if so information was sent to them. This was followed up by a phone call from a member of the research team</p> | <p>Baseline data: N=49 (intervention), N=51 (control)</p> <p>Baseline comparisons: The intervention and control groups were similar in age, sex, marital status and education. The mean age was similar in both groups (81.5 years in the control group and 80 in the intervention group)</p> <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery: The intervention contained four elements delivered through a collaboration between the research team and the local communities; the recruitment, training and retention of volunteers and home visits to the intervention participants from the volunteers</p> <p>Target group:</p> <p>Community-dwelling older adults experiencing loneliness</p> | <p>questionnaire</p> <p>Method of analysis:</p> <p>STATA was used for statistical analysis of the gathered data material</p> <p>Details on analysis methods used not reported</p> | <p>using the De Jong Gierveld Loneliness Scale from 2.1 at baseline to 1.6 at 3 month follow up (p=0.046 Wilcoxon matched-pairs signed-ranks test). However there was no control group for volunteers and while both emotional and social loneliness sub-scales improved, neither was statistically significant. There was also no statistically significant change in their social network scale scores.</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>4/51 (control)</p> <p>10/49 (intervention)</p> | |
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| Martina et al., 2006 | | | | | |
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| First author and year: | Setting: | Method of allocation: | Mental wellbeing measures: | Wellbeing results | Limitations (author): |
| Martina 2006 | Intervention offered in local senior service agencies in the Netherlands | Non-randomised | Friendship availability and development using the Personal Convoy Model of relationships | Six months after completing the programme 63% of participants had made new friends compared to 33% of the control group $\chi^2=9.569$, $p<0.005$). There was no significant difference in the quality of existing friendships although this was higher in the intervention group 62% versus 46% $\chi^2=2.418$, $p=0.120$. | Significant group differences at baseline in levels of loneliness, although accounted for in study |
| Country of study: | Participants: | Intervention(s): | Ability to take initiative in social relationships: The social situations inventory (IOA; Van Dam-Baggen & Kraaimaat, 1990) | $\chi^2=9.569$, $p<0.005$). There was no significant difference in the quality of existing friendships although this was higher in the intervention group 62% versus 46% $\chi^2=2.418$, $p=0.120$. | Limitations (review team): |
| The Netherlands | Older community-dwelling women with an age range from 53–86 (mean: 63) 67 % lived alone | Friendship enrichment programme (n=69) A multifaceted intervention that focuses on several self- management abilities with the aim of empowering the participants to develop and maintain desired friendships | Social support in relationships: Social support questionnaire developed by Van Tilburg (1988) | At six month follow up, compared to the control group, there was a modest improvement in self-esteem (32.31 s.d. +/-7.77 to 34.56 s.d +/-6.35 versus 37.53 s.d. +/- 6.48 to 37.56 s.d. +/- 6.54 but this was not significant $p=0.063$ $F=2.83$. | Not RCT design |
| Aim of study: | Inclusion: | The friendship enrichment programme consists of 12 lessons focused on different topics related to friendship, such as expectations in friendship, self-esteem, making new friends, setting goals and boundaries and solving conflicts in friendship | Self-esteem: | There was a modest improvement in life satisfaction (14.08 s.d. +/-4.19 to 15.19 s.d +/-3.93 versus 17.24 s.d. +/- 3.48 to 16.84 s.d. +/- 3.99. This was almost significant $p=0.051$ $F=3.06$. | Evidence gaps: |
| Examines effects of a friendship enrichment programme targeting older women | Older women (50+) | Each lesson consists of theory, practice in skills that are important in friendship, role-playing of social situations that are difficult for participants and a homework assignment | 10 item from an assertiveness scale (Brinkman 1977) | More research is needed on interventions designed to improve self-management abilities | Funding resources: |
| Study design: | Exclusion (reasons listed): | At a follow-up meeting six months after the programme, participants meet to evaluate their success and redefine their goals relating to friendship and self management in friendship for the future | Loneliness: Scale of De Jong Gierveld & Kamphuis (1985) | Supported by ZonMw; The Netherlands Organization for Health Research and Development | Applicable to UK? |
| Quasi-experimental | None listed | Control: | Satisfaction with Life Scale (Pavot and Diener 1993) | Yes | |
| Quality score: | Motivation/ referral/ payment: | No intervention control (n=60) | Positive and Negative Affect Scale | | |
| + | Participants of the programme recruited to the study | Sample sizes: | Independence measures: | | |
| | The participants received a gift voucher for 12,50 euro after each interview | | Not applicable | | |
| External validity score: | For the control group, participants were recruited based on their interest to participate in the programme in the near future | | Other measures: | | |
| - | | | Socio-demographic characteristics | | |
| | | | Follow-up periods: | | |
| | | | At baseline, 3 and 6 months later | | |
| | | | Method of analysis: | | |
| | | | Parametric/non-parametric | | |
| | | | | There was a significant reduction in negative affect in the intervention group versus the | |

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| | | <p>Assessed for eligibility:</p> <p>N=60 (intervention) N=55 (control)</p> <p>Randomised:</p> <p>Not applicable</p> <p>Baseline data:</p> <p>N=60 (intervention) N=55 (control)</p> <p>Baseline comparisons:</p> <p>The groups significantly differed on everyday health limitations: 68% of the participants in the programme reported health restrictions, compared to 48% in the control group ($p < 0.005$)</p> <p>The women who participated in the friendship programme also scored significantly higher on the loneliness scale than those in the control group ($p < 0.01$) at the baseline</p> <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>Intervention offered in local senior service agencies in the Netherlands</p> <p>Target group:</p> <p>Older women</p> | <p>statistical tests</p> <p>Logistic regression analyses</p> | <p>control group (29.46 s.d. +/-5.37 to 28.14 s.d +/-5.10 versus 25.98 s.d. +/- 4.65 to 29.25 s.d. +/- 3.44. This was significant $p=0.0000$ $F=11.77$.</p> <p>Using a paired comparison between baseline and six month follow up in the intervention group there was a significant increase in life satisfaction ($t= -2.60$, $p=0.012$) and self-esteem ($t=-4.31$, $p=0.000$). There was also a significant decline in negative affect ($t= 2.274$, $p=0.027$) and loneliness ($t=2.904$, $p=0.041$).</p> <p>Six months after completing the programme 63% of participants had made new friends compared to 33% of the control group ($\chi^2=9.569$, $p<0.005$). There was no significant difference in the quality of existing friendships although this was higher in the intervention group 62% versus 46% ($\chi^2=2.418$, $p=0.120$).</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>Intervention group: 9/69 (13.0%) Control group: 5/60 (8.3%)</p> | |
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| Martina et al 2012 | | | | | |
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| First author and year: | Setting: | Method of allocation: | Mental wellbeing measures: | Wellbeing results | Limitations (author): |
| Martina 2012 | Intervention offered in local senior service agencies in the Netherlands | Non-randomised | Self-efficacy: The orientation in friendships scale (developed for this study) | There were no significant differences in changes in the autonomy and control sub-scales of the orientation in friendships scale between baseline and 9 month follow up. | Significant group differences at baseline in loneliness |
| Country of study: | Participants: | Intervention(s): | Friendship availability and development using the Personal Convoy Model of relationships | Programme participants were more likely to express their opinions and to take initiative in making contact with others at the second post-test, compared to baseline. | Limitations (review team): |
| The Netherlands | Older community-dwelling women with an age range from 53–86 (mean: 63) 67 % lived alone | Friendship enrichment programme (n=69) A multifaceted intervention that focuses on several self- management abilities with the aim of empowering the participants to develop and maintain desired friendships | Ability to take initiative in social relationships: The social situations inventory (IOA; Van Dam-Baggen & Kraaimaat, 1990) | | Not RCT design |
| Aim of study: | Inclusion: | The friendship enrichment programme consists of 12 lessons focused on different topics related to friendship, such as expectations in friendship, self-esteem, making new friends, setting goals and boundaries and solving conflicts in friendship | Social support in relationships: Social support questionnaire developed by Van Tilburg (1988) | | Evidence gaps: |
| Examines effects of a friendship enrichment programme targeting older women | Older women (50+) | Each lesson consists of theory, practice in skills that are important in friendship, role-playing of social situations that are difficult for participants and a homework assignment | Independence measures: | A paired comparison of the first with the second and third measurement moment (T0-T1; T0-T2) in the intervention group showed a significant increase in taking initiative in making contact by the participants at both the first post-test ($t_{(1,59)} = -2.062, p=0.044$) and the second post-test ($t_{(1,59)} = -2.725, p=0.008$). | More research is needed on interventions designed to improve self-management abilities |
| Study design: | Exclusion (reasons listed): | At a follow-up meeting six months after the programme, participants meet to evaluate their success and redefine their goals relating to friendship and self management in friendship for the future | Other measures: | Independence results | Funding resources: |
| Quasi-experimental | None listed | Control: | Socio-demographic characteristics | Not applicable | Supported by ZonMw; The Netherlands Organization for Health Research and Development |
| Quality score: | Motivation/ referral/ payment: | No intervention control (n=60) | Follow-up periods: | Attrition: | Applicable to UK? |
| + | Participants of the programme recruited to the study | | At baseline, 3 and 6 months later | Intervention group: 9/69 (13.0%) Control group: 5/60 (8.3%) | Yes |
| External validity score: | The participants received a gift voucher for 12,50 euro after each interview | | Method of analysis: | | |
| - | For the control group, participants were recruited based on their interest to participate in the programme in the near future | | Multiple measure MANOVA | | |

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| | | <p>Sample sizes:</p> <p>Assessed for eligibility:</p> <p>N=60 (intervention) N=55 (control)</p> <p>Randomised:</p> <p>Not applicable</p> <p>Baseline data:</p> <p>N=60 (intervention) N=55 (control)</p> <p>Baseline comparisons:</p> <p>The groups significantly differed on everyday health limitations: 68% of the participants in the programme reported health restrictions, compared to 48% in the control group ($p < 0.005$)</p> <p>The women who participated in the friendship programme also scored significantly higher on the loneliness scale than those in the control group ($p < 0.01$) at the baseline</p> <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>Intervention offered in local senior service agencies in the Netherlands</p> <p>Target group:</p> <p>Older women</p> | | | |
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| Pope et al, 2013 | | | | | |
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| <p>First author and year:</p> <p>Pope, 2013</p> <p>Country of study: USA</p> <p>Aim of study:</p> <p>To evaluate the impacts of a church-based health promotion programme of the United Methodist Church on religiosity, spirituality and social support by race.</p> <p>Study design:</p> <p>Uncontrolled before and after study.</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>-</p> | <p>Setting: Church</p> <p>Participants:</p> <p>African American and white people aged 50 and above. (mean age= 65.33, SD 9.89). From eight counties in South Carolina.</p> <p>Inclusion:</p> <p>Not reported.</p> <p>Exclusion (reasons listed):</p> <p>None</p> <p>Motivation/ referral/ payment:</p> <p>A judicatory official's letter of the programme support to church ministers. A staff member of the Older Adult Ministry of the South Carolina Conference of the United Methodist Church (SCCUMC) contacted church ministers to offer programme information.</p> <p>Leaders were asked to recruit up to six members within their congregation to take part in the programme. Therefore two leaders including an African American leader and a white leader) shared group facilitation responsibility for a single group (up to 12 members).</p> | <p>Method of allocation:</p> <p>Not applicable</p> <p>Intervention(s):</p> <p>African American congregations were paired with white congregations for participation (12 groups). Over 1 year, weekly two-hour meetings addressing spiritual, physical, emotion, mental and social aspects of health.</p> <p>Meetings started with a guided meditation followed by deep breathing and stretching activities and then engaged in mental exercise targeting a range of cognitive functions including a curriculum designed to facilitate spiritual and social formation and growth.</p> <p>Control:</p> <p>No control</p> <p>Sample sizes:</p> <p>142 members. Up to 6 from each race group, 12 groups.</p> <p>Assessed for eligibility:</p> <p>Not applicable</p> <p>Randomised:</p> <p>Not applicable</p> <p>Baseline data:</p> | <p>Mental wellbeing measures:</p> <p>Social Support (SS): 8 items were selected from the original 20 items of the MOS-SSS. These covered Affectionate Support (A) Emotional Support Informational Support(E/I) Positive social interaction (PSI) Tangible Support (T)</p> <p>Independence measures:</p> <p>Not applicable.</p> <p>Other measures:</p> <p>DSE (questionnaire to measure the understanding of the divine and relationship. Religious Orientation Scale (ROS): types of motivations (intrinsic vs. extrinsic).</p> <p>Follow-up periods:</p> <p>One year</p> <p>Method of analysis:</p> <p>Confirmatory factor analyses, a two-way repeated measures analysis of variance (ANOVA), a paired t-test were performed, alongside interview-based qualitative analyses</p> | <p>Wellbeing results</p> <p>Using two-way repeated measures ANOVAs, Social Support(SS):</p> <p>Tangible social support scores improved overall. Overall mean scores increased from 64.32, SD = 25.53 at baselines to 74.72, SD = 22.95) at follow up [F(1,88) = 11.22, p = 0.0012]. Mean tangible social support scores increased from 67.95 SD=22.90 at baseline to 77.56 SD= 21.30 for African Americans at follow up and from 61.50 SD=27.30 at baseline to 72.55 SD= 24.11 for White participants at follow up.</p> <p>The authors suggested that the programme may have facilitated social networks that led to more tangible social support.</p> <p>There were no-significant differences in other measures of social support.</p> <p>In qualitative analysis the most commonly reported themes was enjoyment of the fellowship between participants (African American (n=14) and white groups (n=26).</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>Participants: 51/145 (35% did not</p> | <p>Limitations (author):</p> <p>The quantitative measures used in the study were not sensitive enough to detect the programme's impact on social support.</p> <p>Limitations (review team):</p> <p>No control design</p> <p>Evidence gaps:</p> <p>Funding resources:</p> <p>The Caring Communities Program of the Duke Endowment.</p> <p>Applicable to UK?</p> <p>Yes</p> |

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| | | <p>N= 65 (African American)</p> <p>N= 77 (white)</p> <p>Baseline comparisons:</p> <p>50% of participants were college graduate and 28% with some college education.</p> <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>Group leaders encouraged the participants to develop a customized method for contact within the group to ensure each member was contacted by at least one other member regularly.</p> <p>Target group:</p> <p>Two different racial groups including African American and white congregation members.</p> | | complete) | |
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| Stevens et al 2006 | | | | | |
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| First author and year: | Setting: | Method of allocation: | Mental wellbeing measures: | Wellbeing results | Limitations (author): |
| Stevens et al 2006 | Intervention offered in local senior service agencies in the Netherlands | Non-randomised | Friendship availability and development using the Personal Convoy Model of relationships | Study 2: Six months after completing the programme 63% of participants had made new friends compared to 33% of the control group $\chi^2=9.569$, $p<0.005$. | Significant group differences at baseline. Participants in studies are self selected. No baseline measures in Study 1. |
| Country of study: | Participants: | Intervention(s): Friendship enrichment programme n=52 in Study 1; (n=69 in Study 2) | Loneliness: Scale of De Jong Gierveld & Kamphuis (1985) | There was no significant difference in the quality of existing friendships although this was higher in the intervention group 62% versus 46% $\chi^2=2.418$, $p=0.120$. These results were robust in logistic regression analysis taking account of higher levels of loneliness in the intervention group. | Limitations (review team): |
| The Netherlands | Study 1: Older community-dwelling women with an age range from 52–80 (mean: 63.6) 69 % lived alone | A multifaceted intervention that focuses on several self- management abilities with the aim of empowering the participants to develop and maintain desired friendships | Independence measures: | | Not RCT design |
| Aim of study: | Study 2: Older community-dwelling women with an age range from 53–86 (mean: 63.2) 67 % lived alone | The friendship enrichment programme consists of 12 lessons focused on different topics related to friendship, such as expectations in friendship, self-esteem, making new friends, setting goals and boundaries and solving conflicts in friendship | Not applicable | Other measures: | Evidence gaps: |
| Examines effects of a friendship enrichment and loneliness reduction programme targeting older women | Quasi control: Dutch Aging Survey Comparison Group: 226, mean age 65, 100% women | Each lesson consists of theory, practice in skills that are important in friendship, role-playing of social situations that are difficult for participants and a homework assignment | Socio-demographic characteristics | Follow-up periods: | More research is needed on interventions designed to improve self- management abilities |
| Study design: | | At a follow-up meeting six months after the programme, participants meet to evaluate their success and redefine their goals relating to friendship and self management in friendship for the future | | Study 1: at end of intervention and 10-12 months later | Funding resources: |
| Uncontrolled before and after study (Study 1) and quasi-experimental (Study 2) (results of two studies combined) | | Control: Study 1: No controls | | Study 2: At baseline, 3 months later and 6 months after the programme ended (around 9 to 10 months after baseline) | Supported by ZonMw; The Netherlands Organization for Health Research and Development |
| Quality score: | Inclusion: | Sample sizes: | Method of analysis: | | Applicable to UK? |
| + | Older women (50+) | Study 2: No intervention control (n=55) | Parametric/non-parametric statistical tests Logistic regression analyses | Independence results | Yes |
| External validity score: | Exclusion (reasons listed): | | | Not applicable | |
| | None listed | | | Attrition: | |
| | Motivation/ referral/ payment: | | | Study 1: 20/72 (27%) Study 2: Intervention group: 9/69 (13.0%) Control group: 5/60 (8.3%) | |
| | Study 1: Participants recruited through newspaper and leaflet adverts | | | | |
| | Study 2: | | | | |
| | Recruitment method not stated | | | | |
| | The participants received a gift | | | | |

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| | <p>voucher for 12,50 euro after each interview</p> <p>For the control group, participants were recruited based on their interest to participate in the programme in the near future</p> | <p>Assessed for eligibility:</p> <p>Study 1: N=72 (intervention); no controls</p> <p>Study 2: N=69 (intervention) N=55 (control)</p> <p>Randomised: Not applicable</p> <p>Baseline data: Study 2:</p> <p>N=69 (intervention) N=55 (control)</p> <p>Quasi control group: Dutch Aging Survey Comparison Group: 226, mean age 65, 100% women</p> <p>Baseline comparisons:</p> <p>Study 2: The groups significantly differed on everyday health limitations: 68% of the participants in the programme reported health restrictions, compared to 48% in the control group ($p < 0.005$) The women who participated in the friendship programme also scored significantly higher on the loneliness scale than those in the control group ($p < 0.01$) at the baseline</p> <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>Intervention offered in local senior service agencies in the Netherlands</p> <p>Target group: Older women</p> | | | |
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Table for Evidence Statements 4.1 to 4.2

| Arkoff et al 2004 | | | | | |
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| <p>First author and year: Arkoff 2004</p> <p>Country of study: USA</p> <p>Aim of study: To assess the effectiveness of a life review programme in helping independent older people enhance their psychological functioning to better deal with the threats, challenges and opportunities of their third age</p> <p>Study design: Quasi-experimental study</p> <p>Quality score: -</p> <p>External validity score: -</p> | <p>Setting: University of Hawaii's Manoa Academy of Life Long Learning</p> <p>Participants: Women aged 56 plus participating in Third Age educational activities at a University. Mean age of 65.5 years in intervention group and 74.8 years in comparison group.</p> <p>Inclusion: Not stated</p> <p>Exclusion (reasons listed): Men and younger adults excluded – no reasons listed</p> <p>Motivation/ referral/ payment: None reported</p> | <p>Method of allocation: Not applicable</p> <p>Intervention(s): Workshop using a comprehensive, structured procedure called The Illuminated Life. 14 weekly 2-hour sessions, each devoted to one “life question”. The first 7 questions deal primarily with the past and present, and the rest with the present and future. Leader of group discussions uses a leaders manual.</p> <p>Control: Women attending the Lifelong Learning Academy but not receiving the life review programme.</p> <p>Sample sizes: 18 women in each of the intervention and comparison groups.</p> <p>Assessed for eligibility:</p> <p>Randomised: Not applicable</p> <p>Baseline data: Women with a mean age of 65.5 years in intervention group and 74.8 years in comparison group. 18 women in each group</p> <p>Baseline comparisons:</p> | <p>Mental wellbeing measures: 84-item Scales of Psychological Well-Being (Ryff 1989)</p> <p>Independence measures: Not applicable</p> <p>Other measures:</p> <p>Follow-up periods: At the end of the 14 week course</p> <p>Method of analysis: Quantitative analysis</p> | <p>Wellbeing results For the workshop group, t tests between pretest and posttest means indicated significant gain on all six scales.</p> <p>Autonomy: Pretest Mean 64.9 SD 9.88, Posttest Mean 71.1 SD 8.4 (P<0.001) t=4.18. Environment mastery Mean 62.8 9 SD 14.04, Posttest Mean 71.6 SD 11.45 t=4.45 (P<0.001). Personal Growth Mean 73.8 SD 7.23, Posttest Mean 78.7 SD 4.9 t=3.82 (P<0.01). Positive Relations with others Mean 66.4 SD 12.10, Posttest Mean 71.3 SD 11.4 t=2.73 (P<0.05). Purpose in Life Mean 65.9 SD 11.64, Posttest Mean 72.5 SD 10.16 t=3.58 (P<0.01). Self Acceptance 63.1 SD 15.18, Posttest Mean 72.5 SD 11.93 t=3.48 (P<0.01).</p> <p>For the comparison group, there was no significant difference between pretest and posttest means.</p> <p>Independence results Not applicable</p> | <p>Limitations (author): Results only applicable to healthy older women, not women with any chronic health problems or disabilities.</p> <p>Limitations (review team): Inclusion and exclusion criteria not clearly stated and control group older although no differences in scale scores at baseline</p> <p>Very small scale study</p> <p>Evidence gaps: Look at intervention with men as well as women and with larger groups. No information either on the types of individuals who participate in third age learning programme</p> <p>Funding resources: None stated</p> <p>Applicable to UK? Yes</p> |

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| | | <p>T tests between the workshop and comparison groups indicated that there were no significant differences in mean scale scores at pretest ($p > .05$)</p> <p>Study power: Not stated</p> <p>Intervention delivery: The participants prepare for each session by reading a brief chapter in a workbook: <i>The Illuminated Life: Your Third Age Lifebook</i>, and completing an “exploration” (and sometimes additional exercises) that helps them arrive at their answers to the question.</p> <p>The first half of each session is for whole-group discussion. Then participants form groups of approximately 4 members to share answers to the life question under consideration. A caring disclosure role was formulated to help participants judiciously disclose and pace the responses they share. The rules for sharing give each participant an equal amount of time to divide between uninterrupted disclosure and reception of the response of the group</p> <p>Target group:</p> <p>Healthy independent older retired women</p> | | <p>Attrition: There was no loss to follow up in either group.</p> | |
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Caprara 2013 and Fernandez-Ballesteros et al 2005

First author and year: Caprara 2013 and Fernandez Ballesteros 2005

Country of study: Spain for all interventions - Mexico, Cuba and Chile only for e-learning intervention.

Aim of study: To evaluate the effectiveness of a multi-media programme Vital Aging-M and the manual face to face version of the programme "Vivir con Vitalidad" on the wellbeing of older people and a new Vital Ageing e-learning course.

Study design: Quasi-experimental study

Quality score: -

External validity score: -

Setting: Clubs for older people and residential care facilities in the Madrid region of Spain. The face to face course was delivered at the Autonomous University of Madrid.

The e-learning course was delivered at Autonomous University of Madrid, the Catholic University of Chile, La Habana University (Cuba) and the National Autonomous University of Mexico.

Participants: 25 attending senior citizen clubs mean age 68.1; 28 receiving face to face programme, mean age 65.3 and 37 control group that attended the same social club mean age 70.7.

In another study, 115 people aged over 54. Of these, 73 had attended five different editions of the Vital Aging-M program (mean age = 62.56, 52.2% women) and 42 had not attended the programme (mean age = 62.29; 57.5% women).

Inclusion: Not stated

Exclusion (reasons listed): None stated

Motivation/ referral/ payment: Participants are all volunteers responding to a general announcement for "Vital Aging-M" and Vivir con Vitalidad in selected senior citizen residences and clubs.

Method of allocation: Not applicable

Intervention(s): "Vital Aging-M" is a 50 hour video course with 22 themes and additional supporting material on the internet. It provides courses to meet the following objectives: "To transmit basic knowledge on how to age actively and competently"; "To promote healthy lifestyles"; "To provide training in strategies for compensating cognitive, memory and functional decline"; "To provide training in strategies for optimising affective/emotional, motivational and social competencies"; "To promote personal development and social participation," and "To promote the use of new technologies." The lectures are given by academic professors mainly from Spain, but also from Germany and Italy.

Vivir con Vitalidad as above but lectures given face to face at a University in Madrid. The course last 70 hours in total. The e-learning course Vital Ageing e-Learning lasted 3 months. Like the other courses it also involved tutorials.

Control: Attended same social club centre where undertook other regular activities

Mental wellbeing measures:

Social networks and social contact questions including frequency of contact with friends and neighbours (1-5 levels) and level of satisfaction with these relationships (1-5 levels).

Life Satisfaction. One question asking how satisfied they were with life on that day (1-4 where 4 is a lot of satisfaction)

Independence measures:

Other measures: 18 questions on participation in various activities, with four levels of response. Questions on opinions of activities, opinions on death, ageing and health among others

Physical exercise, diet, health

Formative evaluation only of the vital e-learning programme

Follow-up periods: 6 months

Method of analysis:

Initial baseline comparisons - ANOVA for comparisons between groups where appropriate. Use of Kruskal Wallis where more than two independent variables.

Comparison of before and after eans

Wellbeing results

Quantitative results are not reported. Stated that after both face to face and multi-media course participants reported higher frequency of cultural, intellectual and social activities while no changes were found among controls

Significantly better life satisfaction in participants receiving multi-media course in first study but not in second.

Other

In first study participants had a significantly better view of ageing after the course, but no effect was seen in the second study.

Attrition: Not stated.

Limitations (author):

Small sample sizes and short term follow up make it difficult to see any effects.

Participants were volunteers who were willing to take part in an educational programme and may not reflect wider community.

Limitations (review team):

Sample size small and may not have been able to detect differences in effect. Measure of life satisfaction very crude – one four item question and unclear if validated.

Evidence gaps: Long term longitudinal studies needed.

Funding resources: IMSERO – Institute for Older Adults and Social Services, Spain, European Commission Socrates-Minerva Programme, UAM Santander Research Programme for Latin America.

Applicable to UK?

Yes

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| | <p>Announcements also made to students from University Programmes for Older Adults.</p> | <p>Sample sizes: Assessed for eligibility: Not stated</p> <p>Baseline data: Tested for differences in education, sex and civil status.</p> <p>Study power: Not stated</p> <p>Intervention delivery: Participants are all volunteers responding to a general announcement for “Vital Aging-M” in selected senior citizen residences and clubs. Every group has approximately 20 participants.</p> <p>Each group is supported by a tutor who is responsible for equipment, distribution of materials, and collection of tests. Sessions last 2–3 h with a break of 15 min, and cover one topic each. Those topics requiring 4 h are distributed across two sessions. The entire course takes about 3 months to deliver. In the sessions, written material is distributed to all participants (video-lesson transcription, tests, and exercises for the lesson), they watch the video lesson, and, where required, they fill out the instruments proposed and distributed.</p> <p>Target group: Retired community dwelling older people</p> | <p>for each group with t tests</p> | | |
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| Fernandez-Ballesteros et al 2004 & 2005a,b | | | | | |
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| <p>First author and year:</p> <p>Fernandez Ballesteros 2004 & 2005</p> <p>Country of study: Spain</p> <p>Aim of study:</p> <p>To evaluate the effectiveness of a multi-media programme Vital Aging-M on the wellbeing of older people.</p> <p>A separate evaluation Fernandez Ballesteros 2005 compared with multi-media programme with a traditional face to face a version of the programme."Vivir con vitalidad"</p> <p>Study design:</p> <p>Quasi-experimental study</p> <p>Quality score: -</p> <p>External validity score: +</p> | <p>Setting: Clubs for older people and residential care facilities in the Madrid region of Spain and a university in Madrid.</p> <p>Participants: People aged 60 to 88. 13 in residential facilities, mean age 79.3, Women 92.3%; 44 attending senior citizen clubs mean age 69.9, women 83.7%; 31 in control group that attended the same day care centre, mean age 74.2, women 77.4%. 31 people received the traditional face to face lectures at a university. They were all over 60 (mean age 67.84, women 75%.</p> <p>Inclusion: Not stated</p> <p>Exclusion (reasons listed):</p> <p>None stated</p> <p>Motivation/ referral/ payment:</p> <p>Participants are all volunteers responding to a general announcement for "Vital Aging-M" in selected senior citizen residences and clubs.</p> | <p>Method of allocation: Not applicable</p> <p>Intervention(s): "Vital Aging-M" is a 50 hour video course with 22 themes and additional supporting material on the internet. It provides courses to meet the following objectives: "To transmit basic knowledge on how to age actively and competently"; "To promote healthy lifestyles"; "To provide training in strategies for compensating cognitive, memory and functional decline"; "To provide training in strategies for optimising affective/emotional, motivational and social competencies"; "To promote personal development and social participation," and "To promote the use of new technologies." The lectures are given by academic professors mainly from Spain, but also from Germany and Italy.</p> <p>Control: Attended day care centres where undertook other regular activities</p> <p>Sample sizes: Assessed for eligibility: Not stated</p> <p>Baseline data:</p> | <p>Mental wellbeing measures: Social networks and social contact questions including frequency of contact with friends and neighbours (1-5 levels) and level of satisfaction with these relationships (1-5 levels).</p> <p>Life Satisfaction. One question asking how satisfied they were with life on that day (1-4 where 4 is a lot of satisfaction)</p> <p>Independence measures:</p> <p>Other measures: 18 questions on participation in various activities, with four levels of response. Questions on opinions of activities, opinions on death, ageing and health among others. Physical exercise, diet, health</p> <p>Follow-up periods: 6 months</p> <p>Method of analysis: Initial baseline comparisons - ANOVA for comparisons between groups where appropriate. Use of Kruskal Wallis where more than two independent variables.</p> <p>Comparison of before and after means for each group with t tests</p> | <p>Wellbeing results</p> <p>There were no significant differences in changes in the frequency of social contacts or in satisfaction with these relationships between the three groups following the course.</p> <p>Life satisfaction improved significantly in the community dwelling intervention group from 2.9 (SD 0.65) to 3.19 (SD 0.79) p=0.005.</p> <p>Similar results were seen for the face to face programme and it tended towards an improvement in life satisfaction but this was not significant with scores improving from 2.93 (SD 0.75) to 3.14 (SD 0.79) p=0.11</p> <p>Attrition:</p> <p>Residential care group: 3/13= 23%</p> <p>Community group: 13/44=30%</p> <p>Control group: 4/31= 13%</p> | <p>Limitations (author): The programme does not appear to have been effective in increasing either the frequency or satisfaction of social relationships. A post-hoc explanation is that experimental subjects have a very high baseline level in both. Participants made very little use of the internet homepage and their outside tutors. There was a lack of satisfaction with the use of translated products rather than Spanish language products.</p> <p>Limitations (review team): Sample size small and may not have been able to detect differences in effect. Measure of life satisfaction very crude – one four item question and unclear if validated.</p> <p>Evidence gaps: Long term longitudinal studies needed.</p> <p>Funding resources: European Commission</p> <p>Applicable to UK?</p> <p>Yes</p> |

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| | | <p>Tested for differences in education, sex and civil status.</p> <p>Study power:No</p> <p>Intervention delivery: Participants are all volunteers responding to a general announcement for “Vital Aging-M” in selected senior citizen residences and clubs. Every group has approximately 20 participants.</p> <p>Each group is supported by a tutor who is responsible for equipment, distribution of materials, and collection of tests. Sessions last 2–3 h with a break of 15 min, and cover one topic each. Those topics requiring 4 h are distributed across two sessions. The entire course takes about 3 months to deliver. In the sessions, written material is distributed to all participants (video-lesson transcription, tests, and exercises for the lesson), they watch the video lesson, and, where required, they fill out the instruments proposed and distributed.</p> <p>Target group: Retired community dwelling older people</p> | | | |
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| Fernandez-Ballesteros 2012 | | | | | |
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| <p>First author and year: Fernandez-Ballesteros 2012</p> <p>Country of study: Spain</p> <p>Aim of study: To evaluate the impact of participation of older adults in a university programme on the core of active aging, which involves cognitive, emotional, and social factors</p> <p>Study design: Quasi-experimental study</p> <p>Quality score: +</p> <p>External validity score: +</p> | <p>Setting: The Autonomous University of Madrid</p> <p>Participants: Students on the University Program for Older Adults (PUMA) from 2007 to 2011. Controls were older people not enrolled on educational programmes. 82 individuals were eligible, 54% of them women, with an age range of 55 to 70 (mean age = 61.06, SD = 4.19), assessed in the year 2007 and in May 2010 at post assessment.</p> <p>Inclusion: Individuals were recruited on the standard basis (after an exam) and registered on a 3-year PUMA programme at the Autónoma University of Madrid in October 2007. Control group had to be over the age of 55.</p> <p>Exclusion (reasons listed): No additional stated</p> <p>Motivation/ referral/ payment: Students invited to participate in evaluation</p> | <p>Method of allocation: None – all students who consented were included in intervention group.</p> <p>Controls were a subsample of the Spanish Longitudinal Study of Active Ageing that representative probabilistic sample of the population of Madrid</p> <p>Intervention(s): 3 year university degree with many different possible academic subjects covered, largely humanities and arts. 450 hours of teaching. Attendance at lectures is mandatory, and they are taught by lecturers at the university. goals of the PUMA program are as follows: (1) to promote knowledge and competences (measured by tests and exams), (2) to promote personal development, and (3) to increase social participation.</p> <p>Control: No participation in education programme</p> <p>Sample sizes: Intervention group: Of 67 who has completed programme 56 chose to participate in evaluation, mean age 60.89 (SD 4.33); 50% women; Controls: 39, mean age 61.76 (SD 3.90) 36% women.</p> | <p>Mental wellbeing measures: PANAS (Watson, Clark, & Tellegen, 1988): Positive and negative affect and balance scale.</p> <p>Questions on social participation.</p> <p>Independence measures:</p> <p>Other measures: Promotion of personal development.: cognitive and physical functioning.</p> <p>Follow-up periods: At the end of the 3 year course</p> <p>Method of analysis: t-test tests were applied to determine extent of any significant differences between the two groups at baseline. Second, to examine whether there were differences between the groups attributable to intervention repeated measures ANOVA and ANCOVA (with age and education as covariant) for each dependent variable under study.</p> | <p>Wellbeing results</p> <p>Significant benefits for students as they maintain their negative Affect at post test on PANSS changing from 1.71 (SD 0.41) to 1.65 (SD 0.41) compared to 2.07 (SD 0.55) to 1.79 (SD 0.46) in the control group F=4.448 p=0.039.</p> <p>The intervention group also increased their positive affect from 3.0 (SD 0.42) to 3.15 (SD 0.44) compared with a decline in the control group from 2.98 (SD 0.57) to 2.88 (SD 0.50) F=7.267 p=0.008</p> <p>Both groups increase their social, information seeking and productive activities significantly.</p> <p>Other results</p> <p>Note that health levels maintained in intervention group but declined in control group. Memory and learning performance improved in intervention group but cognitive function declined in control group.</p> <p>Attrition:</p> <p>Intervention: 11/67=16%</p> <p>Control: 37/76= 49%</p> | <p>Limitations (author): A quasi experimental design is a very poor tool from the point of view of threats to internal validity, and it also restricts the potential for generalisation of the results</p> <p>Limitations (review team): High level of dropouts in control group potentially may positively bias the control responses. Unclear how much of a barrier the initial entrance exam is to participation on the course</p> <p>Evidence gaps: A randomised controlled trial (RCT) would be highly advantageous with a view to obtaining results on which to support the promotion of active ageing.</p> <p>Funding resources:</p> <p>Applicable to UK? Yes</p> |

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| | | <p>Assessed for eligibility: 82</p> <p>Baseline data: Controls meant to be representative of Madrid older population</p> <p>Study power: No</p> <p>Intervention delivery: university classes</p> <p>Target group: Community dwelling older people who could pass an entrance exam</p> | | <p>There were no significant differences among the variables of interest between people finishing the programme and those who dropped out; nor were any significant differences found in the quasi-control group between baseline and follow-up.</p> | |
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Fernandez-Ballesteros et al 2013

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| <p>First author and year: Fernandez-Ballesteros 2013</p> <p>Country of study: Spain, Mexico, Chile, Cuba</p> <p>Aim of study: To evaluate the impact of participation of older adults in a university programme on the core of active aging, which involves cognitive, emotional, and social factors</p> <p>Study design: Quasi-experimental study</p> <p>Quality score: +</p> <p>External validity score: +</p> | <p>Setting: Pontificia Universidad Catolica de Chile; Universidad de La Habana (Cuba); Universidad Nacional Autonoma de Mexico; and Universidad Autonoma de Madrid (Spain).</p> <p>Participants: Students on the University Program for Older Adults (PUMA) Controls were older people not enrolled on educational programmes.</p> <p>Inclusion: Individuals were recruited on the standard basis (after an exam) and registered on a 3-year PUMA programme at one of the four universities Control group had to be over the age of 55.</p> <p>Exclusion (reasons listed): Not stated</p> <p>Motivation/ referral/ payment: Students invited to participate in evaluation</p> | <p>Method of allocation: None – all students who consented were included in intervention group.</p> <p>Controls were a representative probabilistic sample of local populations</p> <p>Intervention(s): 3 year university degree with many different possible academic subjects covered, largely humanities and arts. 450 hours of teaching. Attendance at lectures is mandatory, and they are taught by lecturers at the university. goals of the PUMA program are as follows: (1) to promote knowledge and competences (measured by tests and exams), (2) to promote personal development, and (3) to increase social participation</p> <p>Control: No participation in education programme</p> <p>Sample sizes: Intervention group: Of 67 who completed programme 56 chose to participate in evaluation, mean age 60.89 (SD 4.33); 50% women; Controls: 39, mean age 61.76 (SD 3.90) 36% women.</p> <p>Assessed for eligibility: Not stated</p> | <p>Mental wellbeing measures:</p> <p>PANAS (Watson, Clark, & Tellegen, 1988): Positive and negative affect and balance scale</p> <p>To increase social participation. This includes the following activities: information-seeking (reading books, reading newspapers, listening to the radio); social activities (going to shows, going on excursions, doing physical exercise, and going to church); and productive activities (adult and child caregiving, shopping, household management, household work, DIY and handicrafts, etc.). For each activity the question asked was: “How often do you do these activities: Yearly, monthly, weekly, 1daily, or never?”</p> <p>Independence measures:</p> <p>Other measures: Promotion of personal development.: cognitive and physical functioning</p> <p>Follow-up periods:</p> <p>At the end of the 3 year course</p> <p>Method of analysis:</p> | <p>Wellbeing results: Significant benefits for students as they maintain their negative Affect at post test on PANSS changing from 1.71 (SD 0.41) to 1.65 (SD 0.41) compared to 2.07 (SD 0.55) to 1.79 (SD 0.46) in the control group F=4.448 p=0.039.</p> <p>The intervention group also increased their positive affect from 3.0 (SD 0.42) to 3.15 (SD 0.44) compared with a decline in the control group from 2.98 (SD 0.57) to 2.88 (SD 0.50) F=7.267 p=0.008</p> <p>Both groups increase their social, information seeking and productive activities significantly.</p> <p>Independence results</p> <p>Other results</p> <p>Note that health levels maintained in intervention group but declined in control group. Memory and learning performance improved in intervention group but cognitive function declined in control group.</p> <p>Attrition:</p> <p>Intervention: 63/313=20%</p> <p>Control: 125/190= 65%</p> | <p>Limitations (author): A quasi experimental design is a very poor tool from the point of view of threats to internal validity, and it also restricts the potential for generalisation of the results</p> <p>Limitations (review team): High level of dropouts in control group potentially may positively bias the control responses.</p> <p>Unclear how much of a barrier the initial entrance exam is to participation on the course</p> <p>Evidence gaps:</p> <p>A randomised controlled trial (RCT) would be highly advantageous with a view to obtaining results on which to support the promotion of active aging</p> <p>Funding resources:</p> <p>Applicable to UK?</p> <p>Yes</p> |
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| | | <p>Baseline data:</p> <p>Controls meant to be representative of Madrid older population</p> <p>Study power: No</p> <p>Intervention delivery: university classes</p> <p>Target group: Community dwelling older people who could pass an entrance exam</p> | <p>T-test tests were applied to determine extent of any significant differences between the two groups at baseline. Second, to examine whether there were differences between the groups attributable to intervention repeated measures ANOVA and ANCOVA (with age and education as covariant) for each dependent variable under study.</p> | <p>There were no significant differences among the variables of interest between people finishing the program and those who dropped out; nor were any significant differences found in the quasi-control group between baseline and follow-up.</p> | |
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| Orte et al., 2007 | | | | | |
| <p>First author and year:</p> <p>Orte 2007</p> <p>Country of study:</p> <p>Spain</p> <p>Aim of study:</p> <p>To evaluate the effects of an Open</p> | <p>Setting: The community-based programme is offered in the Balearic Islands, Spain</p> <p>Participants: Older adults (age range 60 to 69), mostly women, participating in the offered open university programme</p> <p>Inclusion:</p> | <p>Method of allocation:</p> <p>Not applicable</p> <p>Intervention(s):</p> <p>Open University for Seniors programme. Organised into 3 academic years during which two or three afternoons a week are spent attending classes</p> | <p>Mental wellbeing measures:</p> <p>Social support: Reception, perception, delivery and demand for emotional, informational and material social support</p> <p>Social networks: decrease, increase and maintenance of social relationships, feeling of loneliness and expectations for maintaining current social relationships</p> | <p>Wellbeing results</p> <p>Participants were reported to have made a significant number of new relationships ($p < 0.000$). No values reported. Most students claimed to receive emotional support often ($p < 0.0000$) No values reported.</p> <p>Independence results</p> | <p>Limitations (author):</p> <p>No control group</p> <p>Limitations (review team):</p> <p>Non-validated, non-standardised mental wellbeing measurements</p> <p>Evidence gaps:</p> <p>More research needed investigating</p> |

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| <p>University for Seniors programme</p> <p>Study design:</p> <p>Uncontrolled before and after study</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>+</p> | <p>Community-dwelling older adults motivated to enrol the open university programme</p> <p>Exclusion (reasons listed):</p> <p>Not reported</p> <p>Motivation/ referral/ payment:</p> <p>The participants enrolled for several reasons, e.g. need to keep active or make a change in their lives, an interest in a particular subject, willingness to accompany a friend or relative who wishes to enrol in the program, the desire to get to know new people, the pleasure of studying, the pride in learning day by day and the satisfaction in accomplishing good work</p> | <p>The programme aimed to: open up the university with a specific offer for older people and to integrate them into the university's sociocultural context.</p> <p>Control: No control group</p> <p>Sample sizes: Assessed for eligibility: N=186</p> <p>Randomised: Not applicable</p> <p>Baseline data: N=96</p> <p>Baseline comparisons: Not applicable</p> <p>Study power: Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>The community-based programme is offered in the Balearic Islands, Spain</p> <p>Target group:</p> <p>Older adults with an interest to enrol as senior students in university programmes</p> | <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>Socio-demographic characteristics</p> <p>Follow-up periods:</p> <p>Questionnaires distributed twice each academic year for the three years of the course</p> <p>Method of analysis: Synthesising qualitative and quantitative (descriptive) data The frequency distribution and significant differences analyses were analysed through χ^2</p> | <p>Not applicable</p> <p>Attrition:</p> <p>90/186 (48 %)</p> | <p>the potential role of providing education in active and healthy ageing, especially with regards to the psychosocial outcomes</p> <p>Funding resources</p> <p>Not reported</p> <p>Applicable to UK?</p> <p>Yes</p> |
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| Portero, 2007 | | | | | |
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| First author and year: Portero, 2007 | Setting: University | Method of allocation: Not applicable. | Mental wellbeing measures: The Scale of Well-being (EBP): subjective psychological well-being and relationship with partner (Sanchez Canovas 1998). Social support questionnaire (Parmar et al 1998). | Wellbeing results: There was a significant increase in a level of happiness or psychological well-being from 3.6 (SD=0.4) at baseline to 3.9 (SD=0.4) at follow-up (p<0.000). Overall social support increased significantly from a mean of 31.1 SD 2.2 to mean 32.7 SD = 2.4(P=0.000). | Limitations (author): Further studies are needed to conform the positive impacts on well-being whether it was due to intervention or other individual or social factors. |
| Country of study: Spain | Participants: Students aged 55 and over, enrolled in the Third Age University Program AULA de la Experiencia at the University of Seville. Women (62.5%), 44.3% had an average level of education, implying having completed studies up to university level and 19% with post graduate level degree. | Intervention(s): The educational group activities in the university programme. | Independence measures: None | Independence results Not applicable | Limitations (review team): Concurrent control group is absent. |
| Aim of study: To examine the effect of the Third Age University Programme on health and well-being of the older adults. | Inclusion: Not stated | Control: No control. | Other measures: The General Health Questionnaire (GHQ-28), material and labour well-being. | Attrition: 16/147 (10.8%) | Evidence gaps: None reported |
| Study design: Uncontrolled before and after study design | Exclusion (reasons listed): Not mentioned. | Sample sizes: Assessed for eligibility: Randomised: No randomised. | Follow-up periods: The course of a complete academic year. | | Funding resources: Not mentioned. |
| Quality score: + | Motivation/ referral/ payment: Not mentioned. | Baseline data: N= 163 | Method of analysis: Descriptive statistical analyses. | | Applicable to UK? Yes |
| External validity score: ++ | | Baseline comparisons: Psychological wellbeing, health and social support | | | |
| | | Study power: not reported. | | | |
| | | Intervention delivery: Not mentioned in detail. | | | |
| | | Target group: Older students | | | |

Table for Evidence Statement 5.1

| Frieswijk et al 2006 | | | | | |
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| <p>First author and year:</p> <p>Frieswijk 2006</p> <p>Country of study:</p> <p>Netherlands</p> <p>Aim of study: To evaluate the use of bibliotherapy to help increase self-management ability. This in turn is hypothesised to help people manage resources in such a way that sustainable positive well-being is reached.</p> <p>Study design Randomised controlled study with wait list control group</p> <p>Quality score:</p> <p>++</p> <p>External validity score:</p> <p>++</p> | <p>Setting: Correspondence course posted to individuals homes</p> <p>Participants:</p> <p>Community dwelling older people with slight to moderate levels of frailty. Intervention group average age 72.1 (SD 6.2). 58% of treatment completers male. Control group average age 72.1 (SD 6.2). 58% of treatment completers male.</p> <p>Inclusion:</p> <p>Individuals who scored slightly to moderately frail (score 1 until 5) on the Groningen Frailty Indicator (GFI)</p> <p>Exclusion (reasons listed):</p> <p>No exclusion criteria applied</p> <p>Motivation/ referral/ payment:</p> | <p>Method of allocation:</p> <p>Randomised: odd and even number randomisation</p> <p>Intervention(s): A bibliotherapy, called “GRIP on life”. This was delivered as a correspondence course on how to maintain a firm grip on life with increasing age. It consisted of five different parts, each composed of 11–19 pages, which were printed one-sided in black and white.</p> <p>Control:</p> <p>Wait-list control</p> <p>Sample sizes: Assessed for eligibility:</p> <p>500 random community dwelling older people contacted in each of 6 areas. 1338 responded, 825 met inclusion criteria and 193 agreed to participate. They were randomly assigned to intervention and control groups.</p> <p>Baseline data: 97 in intervention group and 96 in a six month wait list control group.</p> | <p>Mental wellbeing measures:</p> <p>Brief 7 item Pearlin and Schooner Mastery Scale</p> <p>SPF-Index Level Scale (SPFIL) to measure Subjective Wellbeing</p> <p>Independence measures: Self-Management Ability (SMA) Scale (6 sub-scales)</p> <p>Other measures:</p> <p>Follow-up periods: First follow up at 10 weeks with second follow up 6 months later</p> <p>Method of analysis: Differences between groups measured with ANOVA. The F-ratio was used to test the significance of mean differences between conditions. Cohen’s d used to describe the magnitude of group differences.. Hierarchical regression analysis was performed to test the effect of bibliotherapy on subjective well-being and control for differences in subjective wellbeing at baseline.</p> | <p>Wellbeing results: ANOVA: No effect of time of measurement on mastery $F(2,314) = 2.52, p = ns$ and no significant differences seen in changes in mastery scores by second follow up.</p> <p>At baseline SPF-IL scores in intervention and control groups: 2.84 (SD 0.42) and 2.81 (SD 0.38). Participants in the experimental condition scored slightly higher on the SPF-IL at the time of the first post-test 2.81 (SD 0.33) vs 2.71 (SD 0.42) than participants in the control condition ($b = 0.11, p < 0.05$). However this difference was not significant at second post test after 6 months $F(1,156) = 0.34, p = ns$</p> <p>Independence results</p> <p>With ANOVA a main effect of time of measurement found $F(2,314) = 3.16, p < 0.05$, with respondents reporting the highest level of SMA at the pre-test ($M = 21.48$), and lower levels at the time of the first ($M = 21.36$) and the second post-tests ($M = 21.10$). Significant difference in SMA scores favouring intervention group. The intervention group showed an increase in SMA at the time of the first post-test ($M =$</p> | <p>Limitations (author):</p> <p>Mean differences between the experimental and the control group were relatively small and may not be clinically significant the SMA-S and the SPFIL have not been used very much as they were recently developed. Disappearance of effect on wellbeing after 6 months.</p> <p>Limitations (review team):</p> <p>Evidence gaps:</p> <p>Evaluating bibliotherapy that more explicitly has a long-term application e.g. by including some additional exercises for future use.</p> <p>Funding resources: ZonMw (The Netherlands Organisation for Health Research and Development)</p> <p>Applicable to UK? Potentially could be delivered in UK</p> |

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| | | <p>Baseline comparisons: No significant differences stated</p> <p>Study power: Not powered to achieve statistical significance</p> <p>Intervention delivery: Correspondence course where experimental group received a new part of the bibliotherapy every 2 weeks.</p> <p>Target group: Older mild and moderately frail people</p> | | <p>21.73 SD1.96) as compared to the pretest (M = 21.20 SD 2.79), while the control group showed a decrease in SMA at the time of the first post-test (M = 20.96 SD 3.13) as compared to the pre-test (M = 21.50 SD 2.89).</p> <p>Attrition:</p> <p>Intervention group: 20/97=21%</p> <p>Control group: 14/96= 15%</p> | |
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| Kremers et al 2006 & 2007 | | | | | |
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| <p>First author and year:</p> <p>Kremers et al 2006 & 2007</p> <p>Country of study:</p> <p>Netherlands</p> <p>Aim of study: To assess impact of newly designed self-management group intervention based on the Self-Management of Well-being (SMW) theory on self-management ability, well-being, and social and emotional loneliness in older women.</p> <p>Study design: Randomised controlled trial</p> <p>Quality score: +</p> <p>External validity score: +</p> | <p>Setting: Not explicitly stated but women met in groups of 8-12.</p> <p>Participants: 142 women aged 55 and over. Mean age of treatment completers 62.8 (SD 6.4) and controls 65.2 (SD 7.6).</p> <p>Inclusion: Single community dwelling women, 55 years of age and older, were asked to respond by phone if they missed having people around them, wished to have more friends, participated in very few leisure activities, or had trouble in initiating activities.</p> <p>Exclusion (reasons listed): None stated</p> <p>Motivation/ referral/ payment: Potential participants were recruited in 2004 through advertisements in local newspapers in two regions of the Netherlands.</p> | <p>Method of allocation: Not stated</p> <p>Intervention(s): Group self management of wellbeing course - course 'Giving life more LUSTER'. Six meetings each lasting 2½ hours.</p> <p>Control: Controls received no intervention</p> <p>Sample sizes: 142 women randomly assigned to either the intervention group (n=63) or the control group (n=79).</p> <p>Assessed for eligibility: No</p> <p>Baseline comparisons: No significant differences in baseline characteristics between groups (after dropouts) found.</p> <p>Study power:</p> <p>Not stated</p> <p>Intervention delivery: Guided by the SMW theory, each meeting focused on one or more of the six self management abilities. The women were taught to apply these abilities to the five basic needs (dimensions) of well-being, which were referred to with the acronym</p> | <p>Mental wellbeing measures:</p> <p>The Social Production Function Index Level Scale (SPF-IL, Nieboer, Lindenberg, Boomsma, & Van Bruggen, 2005) was used to assess well-being and its five dimensions..</p> <p>De Jong Gierveld and Kamphuis (1985) loneliness scale,</p> <p>Independence measures:</p> <p>Self-management abilities were measured with the Self-Management Ability Scale (SMAS-30, Schuurmans et al., 2005).</p> <p>Other measures: Level of physical functioning was measured with the six-item Physical Functioning sub-scale of the MOS</p> <p>Short Form General Health Survey (Kempen, Brilman, Heyink, & Ormel, 1995; Stewart, Hays, & Ware, 1988).</p> <p>Follow-up periods: T1 at the end of the 6 week intervention period; T2 6 months later</p> | <p>Wellbeing results: Although well-being of women in the intervention group remained at a higher level at T2 the well-being of the controls improved so there was no longer a significant effect of the intervention on well-being after six months.</p> <p>Loneliness was reduced in both the intervention and control groups at T1; they did not differ significantly. Loneliness scores did not differ significantly after 6 months.</p> <p>Independence results:</p> <p>Using SMA-30 scores, the intervention group increased significantly in overall self-management ability after the intervention (at T1), compared to the controls. Intervention group scores increased from 44.7 (SD 9.6) to 48.6 (SD 8.1) vs controls 47.4 (SD 7.3) to 47.5 (SD 8.6). ANCOVA: $F(1, 108)=5.61$, $p<0.05$.</p> <p>Although intervention group scored even higher at T2 (6 months) controls also had higher scores so the difference between groups not significant. $F(1, 88)=2.74$, $p=0.10$.</p> <p>At T1 there were significant group effects for the subscales 'taking initiatives' $F(1, 115)=5.93$, $p<0.05$, 'positive frame of mind' $F(1,$</p> | <p>Limitations (author):</p> <p>Relatively small sample size may explain lack of evidence of intervention on wellbeing in contrast to other studies. It is possible that the extremely high scores for loneliness in both groups at baseline caused a regression to the mean, resulting in improvements in both groups.</p> <p>Limitations (review team):</p> <p>Setting not stated. No power reported and high levels of loss to follow up with much higher drop out rates in intervention group.</p> <p>Intervention may have been too short to have effect.</p> <p>Noted in 2007 paper that a more effective recruitment process might have reached more appropriate target group. 2007 study indicated that study participants not reflective of community based population.</p> <p>Evidence gaps</p> <p>Inconsistent findings compared to previous studies are difficult to interpret, and should be investigated further in future research</p> |

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| | | <p>GLANS, which is Dutch for 'luster'(G for Gemak [Comfort], L for Leuke ezigheden [Stimulation], A for Affectie [Affection], N for Netwerk [Behavioural confirmation], and S for Sterke punten [Status]).</p> <p>During the first meeting the 'GLANS-plate with five slices' was introduced. This is comparable to the food plate with five slices that is used in the Netherlands to stimulate healthy eating habits. The women were then asked to consider their own GLANS-plate and to self diagnose' their own situation: which aspects of the plate they missed, or would like to change or to work on. During the second and subsequent meetings the women learned how to work with their own GLANS-plate by adding activities and people to the slices.</p> <p>Target group: Women experiencing loneliness over the age of 55</p> | <p>Method of analysis:</p> <p>To compare score for self management (ANCOVA) was performed, with SMAS-30 scores at T1 as the dependent variable, group as the independent variable, and SMAS-30 scores at T0 and marital status as covariates.</p> <p>Hierarchical regression analyses were performed to study the direct effect of the intervention on well-being and the mediating effect of overall self management ability on well-being. Wilcoxon signed rank tests were performed on the loneliness scores.</p> | <p>116)=15.77, $p<0.001$, and 'multifunctionality' $F(1, 114)= 4.82$, $p<0.05$, indicating that the intervention was effective for these self-management abilities but there were no significant differences at T2.</p> <p>In regression analysis the intervention was associated with higher wellbeing scores at T1. 4% of variance was associated with intervention (F change (1, 102)=7.90, $p<= 0.01$).</p> <p>Attrition:</p> <p>Time 1 Follow Up: Intervention group 17/63 = 27% Control group: 6/79 = 8%.</p> <p>Time 2 Follow Up: Intervention 27/63= 43% Control 17/79= 22%</p> | <p>Funding resources: Grant from Stichting Sluyterman van Loo, and also support from the University of Groningen</p> <p>Applicable to UK?</p> <p>Yes</p> |
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Table for Evidence Statements 6.1 to 6.4

| Bernard et al., 2011 | | | | | |
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| <p>First author and year:</p> <p>Bernard 2011</p> <p>Country of study: Canada</p> <p>Aim of study:</p> <p>To evaluate a intergenerational telementoring program and its effects on social interaction</p> <p>Study design:</p> <p>Exploratory uncontrolled before and after study, applying both quantitative and qualitative analyses</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>-</p> | <p>Setting: The homes of telementors</p> <p>Participants: Older adults aged 70±7 years (range: 59-82) residing in Ottawa, Canada; Young people (9 students, 9 unemployed youth) residing in Paris, France</p> <p>Inclusion:</p> <p>Eighteen senior volunteer candidates were recruited as telementors All exhibited some bilingual skills (French/English), and were natives of the other language</p> <p>Exclusion (reasons listed):</p> <p>None</p> <p>Motivation/ referral/ payment:</p> <p>The senior participants were recruited in the Ottawa-Carleton area in a seniors club, as well as residents of a long term care centre Some the individuals had participated in previous activities of intergenerational video-conferencing group sessions; interested participants enrolled at the end of an introductory presentation</p> | <p>Method of allocation: Not applicable</p> <p>Intervention(s):</p> <p>10 weekly, 1-hour, telementoring sessions were offered to the participants.</p> <p>Control: No control</p> <p>Sample sizes: Assessed for eligibility: Not applicable</p> <p>Randomised: Not applicable</p> <p>Baseline data: N=18 (Older adults), N= 18 (young people)</p> <p>Baseline comparisons: No comparisons described</p> <p>Study power: Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>The PACE 2000 International Foundation delivered the intervention. Training was provided.</p> <p>Target group:</p> <p>Older adults and young people interested in intergenerational and intercultural interaction</p> | <p>Mental wellbeing measures:</p> <p>Behaviour changes in self-confidence, self-expression, enjoyment and confidence in carrying out a conversation in English, and self-efficacy in overcoming barriers to pronunciation and communication. Social relationships (structural or functional aspects)</p> <p>Independence measures: Not applicable</p> <p>Other measures:Basic demographic data on background education, preferred leisure activities, existing language skills and computer literacy</p> <p>Follow-up periods: Pre- and post programme questionnaires and/or direct observation data recorded by the respective intergenerational coordinators after each session.</p> <p>Method of analysis:</p> <p>The t-test and Chi squared analyses were performed, along with observations and interview-based qualitative analyses</p> | <p>Wellbeing results: Older adults, exhibited higher motivation and compliance rates compared to unemployed youth. All participants (youth and seniors) highly valued the program (average rating over 80%), particularly its inter-cultural aspects as well as the relationships they developed. Positive behavioural shifts were observed after only 2 to 4 sessions. No significance levels reported, only based on descriptive data</p> <p>Independence results: Not applicable</p> <p>Attrition: Participants: 2/18 (11 %, older adults)</p> <p>Sessions: Of a total of 180 sessions planned for an evaluation period of ten weeks (90 sessions for each group), only 98 sessions (54%) were completed</p> | <p>Limitations (author):</p> <p>Small sample size</p> <p>Limitations (review team):</p> <p>No validated measurements on mental wellbeing or social relationships</p> <p>No control design</p> <p>Evidence gaps:</p> <p>Further research on how videoconference based telementoring may function as a tool for a new field of medical research, aiming at understanding how social relationships develop and also have an impact on the risk of health problems</p> <p>Funding resources:</p> <p>New Horizons for Seniors, Human Resources and Skills Development Canada; Youth Canada Works; The Ontario Trillium Foundation; E.E. Baulieu, MD, PhD, President of the Institut pour la Longévité et le Vieillessement; and Catherine Peyge, Mayor of the City of Bobigny, France.</p> <p>Applicable to UK?</p> <p>Yes</p> |

| Blazun et al., 2012 | | | | | |
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| <p>First author and year:</p> <p>Blazun 2012</p> <p>Country of study: Slovenia</p> <p>Aim of study:</p> <p>To study the impact of computer training courses on reduction of loneliness of older people in Finland and Slovenia</p> <p>Study design:</p> <p>Uncontrolled before and after study</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>-</p> | <p>Setting:</p> <p>Training courses were organized in two elderly care homes in Slovenia</p> <p>In Finland, the older people applied spontaneously to the computer training courses and were mostly independent living</p> <p>Participants:</p> <p>Community-dwelling older adults (Finnish sample)</p> <p>Home care residents (Slovenian sample)</p> <p>Inclusion:</p> <p>All participants had little or no ICT knowledge, were healthy, able to read, write and speak, and had the opportunity to devote time to practicing computer skills in their own time and at their own pace The study included participants whose minimum age was 57 years</p> <p>Exclusion (reasons listed):</p> <p>No</p> <p>Motivation/ referral/ payment:</p> <p>In Finland, the older people applied spontaneously to the computer training courses and were partly financed by their own financial contributions</p> <p>No special sampling type or</p> | <p>Method of allocation:</p> <p>Not applicable</p> <p>Intervention(s):</p> <p>3-week computer training courses with plenary sessions and possibilities for discussion</p> <p>In Finland once a week for 4 h</p> <p>In Slovenia once a week for 3 h</p> <p>Control:</p> <p>No control</p> <p>Sample sizes:</p> <p>Assessed for eligibility:</p> <p>Finns spontaneously applied for the training courses Slovenes had to be encouraged by motivational workshops</p> <p>Randomised:</p> <p>Not applicable</p> <p>Baseline data:</p> <p>N= 31 (Slovenia) N= 27 (Finland)</p> <p>Baseline comparisons:</p> <p>In Finland, older people mainly live in apartments, while in Slovenia all participants lived in elderly homes</p> | <p>Mental wellbeing measures:</p> <p>Quality of life, focusing on the older people's daily physical activities</p> <p>Level of loneliness</p> <p>Number of friends</p> <p>Involvement in society</p> <p>General wellbeing</p> <p>Satisfaction with life</p> <p>The authors did not use standardized measurement tools</p> <p>The questionnaires used focused mainly on subjective indicators of the quality of life, which were obtained through self-reporting by the elderly</p> <p>Independence measures:</p> <p>None</p> <p>Other measures:</p> <p>ICT-related questions; access to computer, mobile or land-line phone, routine access to the Internet, familiarity with the Skype application etc.</p> <p>Follow-up periods:</p> <p>Post-intervention, after 3 weeks</p> <p>Method of analysis:</p> | <p>Wellbeing results</p> <p>Inferential statistics showed a significant difference in the reduction of loneliness between the countries, and a decreased level of loneliness of older people after completing the computer training course (Mann-Whitney U; p = 0.001)</p> <p>Although older people experience many age-related problems which may reduce their interest in learning information and communication technology (ICT) skills, it is important that they are computer-proficient, because computer engagement can reduce the level of loneliness of older people and in this way has a positive effect on their quality of life</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition: 13/58 (22.4 %)</p> | <p>Limitations (author):</p> <p>Both questionnaires used in the study were developed in the English language and translated; differences may have occurred</p> <p>Limited sample size, not able to use more complex statistical approaches</p> <p>Cultural differences between the country study samples</p> <p>Due to the different organizational settings of the ICT training courses, the older people in Finland were more self-motivated, and thus no special sampling type or selection criteria were used for the older people registered for the ICT course</p> <p>Limitations (review team):</p> <p>The authors did not use standardized measurement tools</p> <p>No control group</p> <p>Evidence gaps:</p> <p>None reported</p> <p>Funding resources:</p> <p>The research in Slovenia was supported by the European Commission within the project PRIMER-ICT, agreement number 2008-4279/001-001, Project number 143665-LLP-1-2008-1-SI-KA3-KA3MP</p> |

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| | <p>selection criteria were used for the older people registered for the ICT course in Finland</p> <p>In Slovenia, the participants were selected by caregivers among interested residents according to their health status</p> | <p>Among Finnish participants, 81.5% possessed a computer and 84.1% had access to the Internet</p> <p>Only 6.5% of the Slovene participants possessed a computer, but 51.7% of them had the possibility to access the Internet</p> <p>A majority of the Finnish participants had already used a computer (84.6%), while only a few Slovene participants (16.1%) were acquainted with computers before the research study</p> <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>In Finland, the computer training courses were guided by a facilitator, who was responsible for a group of 10–15 participants</p> <p>In Slovenia multipliers were responsible for 1–2 older participant/s within a group of 5–8 older people</p> <p>In both countries the courses were designed using a task-based teaching approach supporting an effective lifelong learning process.</p> <p>Target group:</p> <p>Healthy older adults with no or limited ICT knowledge</p> | <p>Descriptive statistics, nonparametric tests (Pearson’s Chi-square, Mann–Whitney test)</p> | | <p>The provided courses were partly financed by the Finnish government and the City of Kuopio</p> <p>Applicable to UK?</p> <p>Yes</p> |
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| Campbell et al., 2004 | | | | | |
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| <p>First author and year:</p> <p>Campbell 2004</p> <p>Country of study:</p> <p>US</p> <p>Aim of study:</p> <p>To explore the effects that training had on older adults' willingness to use the internet to manage their health care</p> <p>Study design:</p> <p>Uncontrolled before and after study</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>-</p> | <p>Setting:</p> <p>A large suburban Pittsburgh public library and two senior community centres delivering a series of Internet training seminars</p> <p>Participants:</p> <p>Older adults aged 60-83 years, with a mean age of 70</p> <p>58 women; 21 men</p> <p>Inclusion:</p> <p>Not reported</p> <p>Exclusion (reasons listed):</p> <p>Not listed</p> <p>Motivation/ referral/ payment:</p> <p>The training sessions were advertised in two local newspapers, a local magazine, and a local senior citizen newsletter. Flyers were placed in the library and senior community centres</p> | <p>Method of allocation:</p> <p>Not applicable</p> <p>Intervention(s):</p> <p>Small group-based training in internet usage</p> <p>The sessions were five weeks in length, meeting once a week for 2 hours</p> <p>Each session began with an overview of the day's topic, followed by intensive hands-on instruction and practice</p> <p>Control: No control group</p> <p>Sample sizes: Assessed for eligibility: not stated</p> <p>Baseline data:</p> <p>N=79</p> <p>Baseline comparisons:</p> <p>Not applicable</p> <p>Study power: Not powered to achieve statistical significance</p> <p>Intervention delivery: Public library and two senior community centres delivered a series of Internet training seminars</p> <p>Target group: Older adults interested in ICT training</p> | <p>Mental wellbeing measures:</p> <p>Anxiety: the Computer Anxiety Subscale of the Computer Attitude Scale (Gressard & Loyd, 1986)</p> <p>Locus of control: Adopted version of the Multidimensional Health Locus of Control (MHLC) Scale (Wallston & Wallston, 1978)</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>Levels of self-efficacy using computers to locate health information (Busch, 1996; Lee & Bobko, 1994).</p> <p>Follow-up periods:</p> <p>Pre- and post-intervention</p> <p>Method of analysis:</p> <p>Mainly descriptive statistics</p> | <p>Wellbeing results</p> <p>Only results for women were reported.</p> <p>A between-group t-test was performed. It reported a significant reduction in computer anxiety scores $p=0.002$ from pre- (36.55) to post-test (38.83) anxiety scores. (Higher scores represent lower levels of anxiety toward the computer). The standard deviations were 6.97 (pre) and 6.73 (post), and the t score was 3.284.</p> <p>Based on the results, it was concluded that highly educated women who either own a computer or have access to one, and have low levels of anxiety toward computers, with strong feelings of self-efficacy toward computers and the Internet, and an internal locus of control, are more willing than men to use the Internet to find medical information to manage a chronic health problem</p> <p>No statistically significant results and no statistics reported.</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>9/58 (16%) (Women only)</p> | <p>Limitations (author):</p> <p>None reported</p> <p>Limitations (review team):</p> <p>No control group</p> <p>No advanced statistical analyses</p> <p>Only results for women provided</p> <p>Evidence gaps:</p> <p>To examine the outcomes of this kind of intervention in terms of utilisation of health care services and costs that are generated by these individuals</p> <p>Funding resources:</p> <p>Not stated</p> <p>Applicable to UK?</p> <p>Yes</p> |

| Campbell 2005 | | | | | |
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| <p>First author and year:</p> <p>Campbell 2005</p> <p>Country of study:</p> <p>US</p> <p>Aim of study:</p> <p>To explore the effects that training had on older adults' willingness to use the internet to manage their health care</p> <p>Study design:</p> <p>Uncontrolled before and after study</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>-</p> | <p>Setting:</p> <p>A large suburban Pittsburgh public library and two senior community centres delivering a series of Internet training seminars</p> <p>Participants:</p> <p>60 older adults. 42 older people completed the study – 34 women and 8 men. Mean age 72.</p> <p>Inclusion:</p> <p>Not reported</p> <p>Exclusion (reasons listed):</p> <p>Not listed</p> <p>Motivation/ referral/ payment:</p> <p>The training sessions were advertised in two local newspapers, a local magazine, and a local senior citizen newsletter. Flyers were placed in the library and senior community centres</p> | <p>Method of allocation:</p> <p>Not applicable</p> <p>Intervention(s):</p> <p>Small group-based training in internet usage</p> <p>The sessions were five weeks in length, meeting once a week for 2 hours. Each session began with an overview of the day's topic, followed by intensive hands-on instruction and practice</p> <p>Control: No control group</p> <p>Sample sizes:</p> <p>Randomised: Baseline data: N=60</p> <p>Baseline comparisons:</p> <p>Not applicable</p> <p>Study power: Not powered to achieve statistical significance</p> <p>Intervention delivery: Public library and two senior community centres delivered a series of Internet training seminars</p> <p>Target group: Older adults interested in ICT training</p> | <p>Mental wellbeing measures:</p> <p>Locus of control: Adopted version of the Multidimensional Health Locus of Control (MHLC) Scale (Wallston & Wallston, 1978)</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>Follow-up periods:</p> <p>Pre- and post-intervention</p> <p>Method of analysis:</p> <p>Mainly descriptive statistics</p> | <p>Wellbeing results</p> <p>MHLC chance scores showed statistically significant differences between observed baseline and 5-week follow-up results for both men 19.00 (SD 2.62) to 15.88 (SD 3.0) (p=0.02), and for women 16.44 (SD 4.72) to 15.29 (SD 4.1) (p=0.05) suggesting that participants' perceptions of the role chance plays in their health declined</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>18/60 (30%)</p> | <p>Limitations (author):</p> <p>Study sample self selected and a high rate of attrition. Small sample size and time frame. Lack of control group.</p> <p>Limitations (review team):</p> <p>Evidence gaps:</p> <p>To examine the outcomes of this kind of intervention in terms of utilization of health care services and costs that are generated by these individuals</p> <p>Funding resources:</p> <p>Not stated</p> <p>Applicable to UK?</p> <p>Yes</p> |

Cornejo et al 2013a and Cornejo et al 2013b

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| <p>First author and year:</p> <p>Cornejo 2013</p> <p>Country of study: Mexico and the UK.</p> <p>Aim of study: To evaluate the impact of a situated display interface for information from a social network on participation of older person in online interactions and offline interactions with family members.</p> <p>Study design: Uncontrolled before and after study covering 21 week period.</p> <p>Quality score: -</p> <p>External validity score: -</p> | <p>Setting: Home of older adult</p> <p>Participants:</p> <p>For the original version of Tlatoque: 1 88 year old active and independent woman living with her daughter. 19 family members were involved: 6 children (4 female, 2 male) and 13 grandchildren (7 female, 6 male). Relatives were scattered throughout several locations, with almost half of the participants living in the same city as the older adult, with 3 in the UK and the rest in different cities in Mexico.</p> <p>For the enhanced version of Tlatoque: 1 87 year old active and independent woman living with her grandson. There were 11 members of her extended and scattered family in the study: 3 children (all female) , 6 grandchildren (3 female, 3 male), 1 grandniece and 1 nephew. 7 of these family members lived in the same city as the older adult, 4 lived in another city.</p> <p>Inclusion: Active and independent older adult with no previous computing knowledge</p> <p>Exclusion (reasons listed):</p> <p>Motivation/ referral/ payment:</p> <p>Not stated</p> | <p>Method of allocation:Not applicable</p> <p>Intervention(s): Use of a situated display (Tlatoque) – something that looks like an everyday object (in this case a picture frame) to digitally provide a way of interacting with family members on a pared down version of Facebook. An enhanced version of Tlatoque which allowed the older adult to provide feedback including messages, rating and play a photo related game in response to pictures, news, messages and poems received was developed and used by the second older adult / family in the study.</p> <p>Control: No control.</p> <p>Sample sizes: See participants – just 2 families</p> <p>Assessed for eligibility: Not stated</p> <p>Randomised: Not applicable</p> <p>Baseline data: Not applicable</p> <p>Baseline comparisons: Not applicable</p> <p>Study power: Not applicable</p> <p>Intervention delivery: Not stated who delivered training on how to use Tlatoque</p> <p>Target group: Very old people</p> | <p>Mental wellbeing measures:</p> <p>Impact of level of interaction by younger family members with older adult.</p> <p>Independence measures: None stated</p> <p>Other measures: Use and adoption of Tlatoque;</p> <p>Follow-up periods: 21 days</p> <p>Method of analysis: Analysis of Facebook posts and structured interviews with family members</p> | <p>Wellbeing results</p> <p>In the first evaluation children uploaded 3.35 photos per day and grandchildren 9.8 photos per day (No significance statistics reported).</p> <p>2 family members joined Facebook and others reactivated accounts. reactivated . The older adults children uploaded 0.65 photos per day and grandchildren 3.74 photos per day (No significance statistics reported)</p> <p>Qualitative responses indicated that older adults became engaged with the social network activities of their relatives. New offline interactions and conversations between the older adults and family members started. There were new offline meetings and video communications with distant relatives.</p> <p>Independence results: Not stated</p> <p>Attrition: Not applicable</p> | <p>Limitations (author):</p> <p>Limitations (review team): Very small uncontrolled study that does not use any standardized wellbeing or independence measures</p> <p>Evidence gaps: Need larger scale studies to see if these findings can be replicated</p> <p>Funding resources: Mexican National Council of Science and Technology (Consejo Nacional de Ciencia y Tecnología – CONACYT) and author scholarship.</p> <p>Applicable to UK? Yes – could be used in the UK and some family members were in UK. The product has also been adapted for use in a tablet.</p> |
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| <p>First author and year: Cotten 2013</p> <p>Country of study: US</p> <p>Aim of study: To examine how Internet use affects perceived social isolation and loneliness of older adults in assisted and independent living communities To examine the perceptions of how Internet use affects communication and social interaction</p> <p>Study design: RCT (Ongoing study, data from the first wave of data collection reported here)</p> <p>Quality score: -</p> <p>External validity score: -</p> | <p>Setting: Community based intervention conducted in Alabama - a US state ranked among the lowest in regards to individuals living in households with Internet access</p> <p>Participants: Older adults living in assisted and independent living communities, predominantly female (82 %), with a mean age of 83 years The sample was almost evenly split between assisted and independent living residents</p> <p>Inclusion: Older adults living in assisted and independent living communities</p> <p>Exclusion (reasons listed): Not listed</p> <p>Motivation/ referral/ payment: Not reported</p> | <p>Method of allocation: Not stated</p> <p>Intervention(s): ICT training intervention</p> <p>Older adults living in assisted and independent living communities were given 8 weeks of training in using computers and the Internet to communicate with family and friends (primarily through email and Facebook) and to find information</p> <p>Control: 2 groups: Attention control group: Participants in the attention control arm were involved in 8 weeks of activities unrelated to ICTs</p> <p>Control group: Participants in the true control group did not participate in any intervention activities</p> <p>Sample sizes: Assessed for eligibility:</p> <p>Randomised: Not applicable (at this reporting stage)</p> <p>Baseline data: N= 205</p> <p>Baseline comparisons: As this is in focus of this paper, please see under results</p> <p>Study power: Not powered to achieve statistical</p> | <p>Mental wellbeing measures: Loneliness: UCLA Scale Perceived social isolation: Unstandardised scale including questions on how much of the time the participants were bothered by not having a close companion, not having enough friends, and not seeing enough of the people they feel close to</p> <p>Independence measures: Not applicable</p> <p>Other measures: Socio-demographic variables The quality and quantity of communication with others as a result of Internet use: Participants who reported going online at least once every few months were asked a series of 7 questions regarding their perceptions of how Internet use had affected their social interactions with others</p> <p>Follow-up periods: Participants from all 3 arms were surveyed 5 times over the course of 1 year: before the 8 weeks (at baseline); at the end of the 8-week intervention; and at 3, 6 and 12 months after the end of the 8-week intervention</p> <p>Method of analysis: Because data collection is not yet complete for all waves of the study, this analysis only uses time 1 (or pretest) data for a cross-sectional analysis</p> | <p>Wellbeing results Results of regression analyses showed a relationship between the frequency of going online and the measured socio-emotional outcomes and between frequency of going online and selected Internet-usefulness outcomes; among the socioemotional outcomes, increased frequency of going online was associated with decrease in loneliness scores ($P=.001$) After controlling for the number of friends and family, physical/emotional social limitations, age, and study arm, the association remained ($P=.005$)</p> <p>Frequent internet use was associated with a decrease in respondents' perceived social isolation ($P=.06$)</p> <p>Among the measures of perception of the social effects of the Internet, all outcomes showed a statistically significant relationship with frequency of going online. Each 1-point increase in the frequency of going online was associated with a 0.508-point increase in agreement that using the Internet had made it easier to reach people ($P<.001$); a 0.516-point increase in agreement that using the Internet had contributed to the respondents' ability to stay in touch ($P<.001$); a 0.297-point increase in agreement that using the Internet had made it easier to meet new people ($P=.01$); a 0.306-point increase in agreement that using the Internet had increased</p> | <p>Limitations (author): Small sample size The lack of diversity in terms of gender and race/ethnicity, and lack of measures of disability, caregiving, migration, chronic health conditions The study was only conducted in Alabama Cross-sectional nature of the data, no casual relationships identified</p> <p>Limitations (review team): Self-reported measurements on mental wellbeing outcomes The relationship between internet use and mental wellbeing outcomes were measured among a group of self-motivated Internet users</p> <p>Evidence gaps: Research needed to provide insights on older adults' expectations about how going online might impact levels of loneliness and social isolation Also, further research is needed on how technology usage may impact older adults not living in assisted and independent living communities and how these processes may vary as a function of gender, race/ethnicity, severity of health impairment, and region of the country</p> <p>Funding resources: This study was supported by grant number R01AG030425 from the National Institute on Aging, US</p> <p>Applicable to UK? Yes, implemented in a socio-cultural context similar to UK</p> |
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| | | <p>significance</p> <p>Intervention delivery: The ICT intervention was delivered in assisted and independent living community contexts</p> <p>Target group: Older adults living in assisted and independent living communities</p> | <p>Regression analysis was used to determine the relationship between frequency of going online and isolation and loneliness (n=205) and perceptions of the effects of Internet use on communication and social interaction (n=60)</p> | <p>the quantity of respondents' communication with others ($P=.01$); a 0.491-point increase in agreement that using the Internet had made the respondent feel less isolated ($P<.001$); a 0.392-point increase in agreement that using the Internet helped the respondent feel more connected to friends and family ($P=.001$); and a 0.289-point increase in agreement that using the Internet had increased the quality of respondents' communication with others ($P=.01$)</p> <p>Independence results Not applicable</p> <p>Attrition: There were 205 participants in the entire sample, with data from 205 participants for the mental wellbeing analyses, and data from 60 participants for the Internet outcomes because people who responded that they never went online (n=145) were not asked the Internet outcome questions</p> | |
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| Dow et al., 2008 | | | | | |
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| <p>First author and year:</p> <p>Dow (2008)</p> <p>Aim of study:</p> <p>To test the feasibility of a computer intervention for improving social interaction and promoting the mental health of rural carers</p> <p>Study design:</p> <p>Combined pre- and post-intervention measures with interviews to determine the feasibility of the intervention and the acceptability of the study design to participants</p> <p>Quality score:</p> <p>-</p> <p>External validity score: ?</p> | <p>Setting: A rural community setting in Australia</p> <p>Participants:</p> <p>12 women and 2 men, aged from 50 to 81 years, with an average of 65.5 years. Most carers (13) cared for a spouse and one cared for her son.</p> <p>Inclusion:</p> <p>Living in the Pyrenees sub region; providing personal care for a co-resident relative (at least one personal activity of daily living); 65 years of age or over; not having a computer; scoring ≥ 5 on Geriatric Depression Scale – 15-item short form (GDS-15); and not linked with carer support (excluding respite).</p> <p>Exclusion (reasons listed):</p> <p>No</p> <p>Motivation/ referral/ payment:</p> <p>Carers were recruited via local newspapers, word of mouth and carer support groups.</p> <p>Respite and travel costs were covered as required.</p> | <p>Method of allocation:</p> <p>Not applicable</p> <p>Intervention(s):</p> <p>Computer training consisted of two groups of 8 with one three hour session per week over a 4-week period.</p> <p>Control:</p> <p>No no-intervention control</p> <p>Sample sizes:</p> <p>14 carers and 2 care recipients attended computer training in a local venue.</p> <p>Assessed for eligibility:</p> <p>Randomised:</p> <p>Not applicable</p> <p>Baseline data:</p> <p>Measures of confidence in using email and Internet; loneliness; depressive symptoms; and carer burden</p> <p>Baseline comparisons:</p> <p>Three months after baseline, participants were re-administered baseline measures.</p> | <p>Mental wellbeing measures:</p> <p><u>Loneliness</u> was measured using the UCLA Loneliness Scale (UCLA); <u>depressive symptoms</u> were assessed using the GDS-15; and <u>carer burden</u> using the Zarit Burden Interview (ZBI).</p> <p>Independence measures:</p> <p>None</p> <p>Other measures:</p> <p>Measures of confidence in using email and Internet developed for this study. The confidence scales were Likert scales from 0 to 10 with 0 - 'not at all confident' and 10 - 'very confident'.</p> <p>Follow-up periods:</p> <p>3-month follow-up</p> <p>Method of analysis:</p> <p>Descriptive analysis; content and thematic analyses</p> | <p>Wellbeing results</p> <p>Improvement for most participants in depressive symptoms and social isolation, but little change in carer burden. Participants identified many social benefits associated with the computer intervention, such as intergenerational connection, community building, skills and confidence and preparation for the future.</p> <p>Most carers reported increased confidence in email and Internet use.</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition: ?</p> | <p>Limitations (author):</p> <p>Small sample size</p> <p>Some components of the intervention could be better tailored for this population. Installation should take place during normal business hours and training could be extended.</p> <p>Limitations (review team):</p> <p>The focus of the study was mainly to test feasibility of the intervention rather than outcomes.</p> <p>Evidence gaps: ?</p> <p>Funding resources:</p> <p>Beyondblue, the National Depression Initiative</p> <p>Applicable to UK?</p> <p>Yes</p> |

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| | | <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p><i>Materials:</i> Participants were given refurbished personal desktop computer with a new modem, internet connection including 6 months of unlimited time and download Internet access for the cost of a local call. A free telephone help line was also available for 6 months.</p> <p>The computer training program included: basic computer operation, Internet searching, sending and receiving emails, virus protection and avoiding dangers (such as scam emails).</p> <p>After the final training session, participants were asked to complete a survey about computer installation and training, software and help desk support.</p> <p>Three months after baseline, participants were re-administered baseline measures. They were interviewed about their experiences using the computer and intentions about future use. They were also invited to a group discussion about their experiences of the computer intervention.</p> <p>Target group: rural carers</p> | | | |
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| Fitzpatrick et al., 2003 | | | | | |
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| <p>First author and year:</p> <p>Fitzpatrick (2003)</p> <p>Country of study:</p> <p>US</p> <p>Aim of study:</p> <p>To examine the relationship between participation in a computer training program and well-being among religious sisters living in a retirement community</p> <p>Study design:</p> <p>Quasi-experimental design</p> <p>Multi-method approach including participant observation, field notes, face-to-face interviews, survey, and assessing the effectiveness of computer skills</p> <p>Quality score:</p> <p>-</p> <p>External validity score: -</p> | <p>Setting:</p> <p>The Mercyknoll Incorporated -a retirement community for older religious sisters (approx. 100 residents)</p> <p>Participants:</p> <p>24 sisters; age range from 59 to 93 (a mean age of 76.3 years); the majority were in relatively good health.</p> <p>Inclusion:</p> <p></p> <p>Exclusion (reasons listed):</p> <p>Not listed</p> <p>Motivation/ referral/ payment:</p> <p>Sample recruited using a needs assessment questionnaire about their interest in participating in the computer training program</p> | <p>Method of allocation:</p> <p>Participants were allocated between the two groups using a needs assessment questionnaire where they expressed their interest in participating in the computer training program.</p> <p>Two groups: a participant group and a non-participant group.</p> <p>Participants group was matched with non-participants group on age, gender, length of time in residence, education, and income.</p> <p>Intervention(s):</p> <p>Computer-training program</p> <p>Control:</p> <p>Yes</p> <p>Sample sizes:</p> <p>Participant group (N = 12); Non-participant group (N = 12)</p> <p>Assessed for eligibility:</p> <p>Randomised:</p> <p>No</p> <p>Baseline data:</p> <p>Baseline comparisons:</p> <p>Study power:</p> | <p>Mental wellbeing measures:</p> <p>Psychological General Well-Being (PGWB) Schedule developed as an index to measure self-representations of interpersonal affective or emotional states reflecting a sense of subjective well-being or distress.</p> <p>Independence measures:</p> <p></p> <p>Other measures:</p> <p></p> <p>Follow-up periods:</p> <p>No follow-up</p> <p>Method of analysis:</p> <p>Descriptive statistics (frequencies and means)</p> <p>Content analyses methods</p> | <p>Wellbeing results</p> <p>The results from the PGWB survey indicated that mean scores from the total PGWB Schedule and the 6 subscales were higher for the non-participating group than for the participating group.</p> <p>Independence results</p> <p></p> <p>Attrition:</p> <p>Not reported</p> | <p>Limitations (author):</p> <p>Residents who live in a retirement facility already receive considerable social support which may create difficulties in detecting meaningful differences between groups.</p> <p>Sample size</p> <p>Pre-intervention and post-intervention tests</p> <p>Limitations (review team):</p> <p>Limited statistical analysis of the well-being data</p> <p>Evidence gaps:</p> <p></p> <p>Funding resources:</p> <p>The Sisters of Mercy and the Institute in Gerontology at Saint Joseph College, West Hartford, Connecticut, supported the computer-training program.???</p> <p>Applicable to UK?</p> <p>Yes</p> |

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| | | <p>Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>The first phase of the data collection: participant observation and the collection of field notes.</p> <p>The second phase: self-administered interviews of the Psychological General Well-Being (PGWB) Schedule to both the participant group and the non-participant group (lasted approx. one hour).</p> <p>The third phase: face-to-face interviews.</p> <p>Target group:</p> <p>Religious sisters living in a retirement community</p> | | | |
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| Jimison et al 2013 | | | | | |
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| <p>First author and year:</p> <p>Jimison 2013</p> <p>Country of study:</p> <p>US</p> <p>Aim of study:</p> <p>To test feasibility and assess impact of a low-cost and scalable approach to providing a comprehensive socialisation intervention for older adults using a health coaching platform for facilitating a health coach in managing health interventions</p> <p>Study design:</p> <p>Pilot before and after study</p> <p>Quality score:</p> <p>-</p> <p>External validity score: -</p> | <p>Setting:</p> <p>Community dwelling older people in Oregon</p> <p>Participants:</p> <p>9 independently living older adults (mean age 73.8 ± 6.7, 89% female) without dementia</p> <p>Inclusion: Not stated</p> <p>Exclusion (reasons listed):</p> <p>People with dementia</p> <p>Motivation/ referral/ payment:</p> <p>Not reported</p> | <p>Method of allocation: Not stated</p> <p>Intervention(s): Computer-based health coaching interventions for older people in their homes. This includes modules to assess health behaviour goals, motivations, barriers and readiness to change.</p> <p>Control: No control group</p> <p>Sample sizes: 9 people in feasibility study</p> <p>Study power: Not applicable</p> <p>Intervention delivery: Dynamic user model continuously updated with measures from sensor data in the home. Sensor data from the home provides feedback and updates on the adherence of patients' activities and adherence to their health goals. This data then triggers active methods for both alerting and automated coaching messages. There are 2 interfaces to the coaching platform: 1) the patient interface and a coach interface. The patient interface has a home page with general news, semi-automated tailored weekly messages from the coach, and an action plan for the week.</p> <p>Target group: Community dwelling older people</p> | <p>Mental wellbeing measures:</p> <p>Size of social network and time interacting with people.</p> <p>Independence measures:</p> <p>Other measures:</p> <p>Participants were interviewed at 3 months to determine user satisfaction, usability issues with the technology, as well as general impressions and suggestions for future use.</p> <p>Follow-up periods:</p> <p>3 months</p> <p>Method of analysis:</p> <p>Descriptive</p> | <p>Wellbeing results</p> <p>Study participants logged 4410 minutes of videoconferencing, with a peak usage occurring during week three (1247 min).</p> <p>On average each participant talked to 5 people using Skye (range 2 – 10 people). Although trained to speak with family members they often contacted other study participants. This led to 'fast friendships' developing.</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>None</p> | <p>Limitations (author):</p> <p>Limitations (review team): Very small scale feasibility study which needs to be evaluated on larger scale. Unclear how individuals selected to participate in study – very limited measurement of social networks in this feasibility study.</p> <p>Evidence gaps: Will expand intervention and evaluate using the Ludden Social Network Scale-Revised (LSNS-R)10, which is a brief instrument measuring social contacts in the categories of family and friends (including neighbours). Will also evaluate using the UCLA-R Loneliness Scale10 to assess loneliness at baseline and after the intervention.</p> <p>Funding resources: National Institute on Aging (Grants NIA P30AG024978 and ASMMI0116ST) and the Alzheimer Association</p> <p>Applicable to UK?</p> <p>Yes</p> |

| Kahlbaugh et al., 2011 | | | | | |
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| <p>First author and year:</p> <p>Kahlbaugh, 2011</p> <p>Country: USA</p> <p>Aim of study:</p> <p>To evaluate the effects of compensatory strategies provided by Wii technology on physical activity, loneliness and mood.</p> <p>Study design:</p> <p>Before and after study</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> | <p>Setting:</p> <p>Independent living residential apartments</p> <p>Participants:</p> <p>4 men, 32 women, the mean age=82 (SD=9.8), dominantly white, widowed, with at least a high school degree.</p> <p>Inclusion:</p> <p>Healthy older people</p> <p>Exclusion (reasons listed):</p> <p>Unknown</p> <p>Motivation/ referral/ payment:</p> <p>Participants were recruited via flyers posted in the residential facilities and through informational sessions by the first author.</p> <p>Resident directors recruited seven participants willing to serve as “no visit control”. Participants were paid \$5 per session.</p> | <p>Method of allocation: 28 people were randomly assigned to a Wii game or watching television programmes of their choice.</p> <p>Intervention(s): Wii is a computerised version of leisure activities, simulation games such as bowling.</p> <p>Control: TV control, and no visit control</p> <p>Sample sizes: Assessed for eligibility: not known in detail but older people in good health in general.</p> <p>Randomised: yes</p> <p>Baseline data: N=16 (Wii); N=12 (TV control); N=7 (no visit control)</p> <p>Baseline comparisons: Loneliness: 40 (9.0) for Wii, 41(9.20 for TV, 37 (10.0) for no visit control.</p> <p>Positive mood: 36.8(7.3), 33.2 (7.3), 33.7 (7.2). Life satisfaction: 12 (3.8), 12 (4.0), 13 (3.7).</p> <p>Study power: Unknown</p> <p>Intervention delivery: Research assistants were assigned to visit a participant either to play Wii or to watch TV, and stayed with that participant over the course.</p> <p>Target group: healthy older people</p> | <p>Mental wellbeing measures:</p> <p>The UCLA Loneliness Scale version 3, the Positive and Negative Affect Scale (PANAS). The life satisfaction Scale, the MOS 36-item Short Form Health Survey (SF-36).</p> <p>Independence measures:</p> <p>NA</p> <p>Other measures:</p> <p>Physical activity, health quotient.</p> <p>Follow-up periods:</p> <p>10 weeks</p> <p>Method of analysis:</p> <p>Descriptive statistics, three repeated measure of ANOVAs, hierarchical regression analyses.</p> | <p>Wellbeing results</p> <p>For entire sample (not separated for different groups) Loneliness: 39.77 (SD=9.1) for pretest and 40.67 (11.8) for posttest,</p> <p>Positive mood: 36(7.3) and 31(7.7) for before and after respectively.</p> <p>Life satisfaction: 12.49(3.8), 11.94 (4.4).</p> <p>In figure, the Wii group presented graphically lower loneliness (p<0.005) and no group difference in positive mood, relative to the TV group. (precise figures in each group at posttest not reported)</p> <p>Independence results</p> <p>NA</p> <p>Attrition: 1 person died.</p> <p>1/36 (2.8 %)</p> | <p>Limitations (author):</p> <p>Small scale</p> <p>Limitations (review team):</p> <p>Other simulation games other than blowing alone could have been explored.</p> <p>Evidence gaps:</p> <p></p> <p>Funding resources:</p> <p>Provided by a CSU grant</p> <p>Applicable to UK?</p> <p>Yes</p> |

| Lagana et al., 2013 | | | | | |
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| <p>First author and year:</p> <p>Lagana, 2013</p> <p>Country: USA</p> <p>Aim of study:</p> <p>To explore the impacts of computer and internet training in older age and attempt to address the diversity gaps in the ethnogeriatric literature.</p> <p>Study design:</p> <p>RCT</p> <p>Quality score:</p> <p>+</p> <p>External validity score: +</p> | <p>Setting:</p> <p>Non-institutionalised residents in community</p> <p>Participants:</p> <p>Mean age= 69.12±10.37, age range: 51-92, 42 women and 18 men. 1/3 white.</p> <p>Inclusion:</p> <p>Being at least 50 years old</p> <p>Being fluent in English</p> <p>Being willing and able to attend all six sessions of the one-to-one training</p> <p>Staying in the area for the next two months</p> <p>Being able to access a computer at their home.</p> <p>Exclusion (reasons listed):</p> <p>Residing in an institutional setting</p> <p>Being unable to grant informed consent</p> <p>Having more 'minor' computer technology experience.</p> <p>Motivation/ referral/ payment:</p> <p>Participants were volunteered to take part in. Sampling strategies used were purposive sampling using</p> | <p>Method of allocation:</p> <p>Unknown</p> <p>Intervention(s):</p> <p>Computer and Internet training: one to one manualized training intervention.</p> <p>2 hour-session per week for 6 weeks</p> <p>Control:</p> <p>The waiting list/control group: the same training was administered to the group after their post-test.</p> <p>Sample sizes:</p> <p>Assessed for eligibility: yes</p> <p>Randomised: yes</p> <p>Baseline data:</p> <p>N=60</p> <p>Baseline comparisons:</p> <p>Self-esteem-15.66 for intervention, 15.76 for control group.</p> <p>Study power:</p> <p>a-priori power analyses conducted 13 participants for the self-esteem variable based on Billipp's findings [ES=0.87]</p> <p>12 people for computer self-efficacy variable [ES=0.94]</p> | <p>Mental wellbeing measures:</p> <p>Rosenberg Self-Esteem Scale</p> <p>SF-12 Health survey</p> <p>Independence measures:</p> <p>Computer self-efficacy</p> <p>Other measures:</p> <p>The Beck Depression Inventory</p> <p>The Older Adults' Computer Technology Attitudes Scale</p> <p>Computer User Self-Efficacy Scale</p> <p>Follow-up periods:</p> <p>6 weeks</p> <p>Method of analysis:</p> <p>MANCOVAs, Roy-Bargmann's stepdown analyses.</p> | <p>Wellbeing results</p> <p>Self-esteem: 15.66 for intervention vs. 16.46 for control at posttest.</p> <p>There was no significant difference between groups in self-esteem after the intervention.</p> <p>Independence results</p> <p>The intervention group reported greater self-efficacy than the waitlist/control group $F(1,56)=28.89$ ($p=0.001$).</p> <p>Attrition:</p> <p>Unknown</p> | <p>Limitations (author):</p> <p>Small sample</p> <p>Short follow-up period</p> <p>Most participants were non-white, living in urban or suburban areas, which limits generalization of the study results.</p> <p>Limitations (review team):</p> <p>Unclear whether any drop outs or exclusions from analysis as this data not reported. Unclear what procedures used to assign individuals to intervention or control groups.</p> <p>Evidence gaps:</p> <p>Funding resources:</p> <p>No conflict of interest</p> <p>Applicable to UK?</p> <p>Yes</p> |

their connections in their ethnic communities and snowballing sampling by mentioning to research participants that the researchers were looking for referrals to other older adults who could participate in the study.

6 people for computer attitudes [ES=0.87]

29 participants for depressive symptoms [ES=0.55]

The upper limits of 30 participant per groups chosen

Intervention delivery:

The first author trained all RAs to ensure their effectiveness as one-on-one computer trainees and to avoid deviating from training manual instructions and to keep a diary of the training experience with each trainee and to document anomalies/deviations from the instructions.

Target group: older people

| Larsson et al., 2013 | | | | | |
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| <p>First author and year:</p> <p>Larsson, 2013</p> <p>Country: Sweden</p> <p>Aim of study:</p> <p>To explore how client-centred occupational therapy intervention processes for meaningful Social Internet-Based Activities (SIBAs) can be designed and to assess the impacts of SIBAs on seniors' social activities and social contacts.</p> <p>Study design:</p> <p>Uncontrolled before and after study with mixed qualitative and quantitative methods</p> <p>Quality score: -</p> <p>External validity score: -</p> | <p>Setting:</p> <p>Community</p> <p>Participants:</p> <p>Age 65-85</p> <p>Inclusion:</p> <p>Living independently, 65 years or older, experiences from using the internet, no regular or independent in SIBAs, access to the internet at home.</p> <p>Exclusion (reasons listed):</p> <p>Not listed</p> <p>Motivation/ referral/ payment:</p> <p>All participants signed a voluntary consent letter before the intervention.</p> | <p>Method of allocation:</p> <p>Not applicable</p> <p>Intervention(s):</p> <p>Client-centred occupational therapy intervention processes for meaningful Social Internet-Based Activities (SIBAs)</p> <p>Control:</p> <p>No control</p> <p>Sample sizes:</p> <p>Assessed for eligibility:</p> <p>Randomised: NA</p> <p>Baseline data:</p> <p>N=5</p> <p>Baseline comparisons:</p> <p>Ann 1-2</p> <p>Sven 1-2</p> <p>Marie 1-2</p> <p>Bengt 11-12</p> <p>Greta 3-4</p> <p>Self-reported loneliness:</p> <p>Ann 33</p> | <p>Mental wellbeing measures:</p> <p>The Social Network offline & online and the UCLA Loneliness Scale.</p> <p>Independence measures:</p> <p>NA</p> <p>Other measures:</p> <p>The Assessment of Computer-Related Skills (ACRS).</p> <p>Goal Attainment Scaling (GAS)</p> <p>Canadian Occupational Performance Measure (COPM)</p> <p>Follow-up periods:</p> <p>One month</p> <p>Method of analysis:</p> <p>A qualitative, descriptive, multiple case study.</p> <p>Field notes and interviews</p> | <p>Wellbeing results</p> <p>Social network online & offline</p> <p>No of social contacts on the internet</p> <p>Ann 1-2 vs. 5-6</p> <p>Sven 1-2 vs. 1-2</p> <p>Marie 1-2 vs. 5-6</p> <p>Bengt 11-12 vs. 7-8</p> <p>Greta 3-4 vs. 7-8</p> <p>The UCLA Loneliness Scale</p> <p>Self-reported loneliness:</p> <p>Ann 33 vs. 32</p> <p>Sven 38 vs. 37</p> <p>Marie 36 vs. 40</p> <p>Bengt 37 vs. 41</p> <p>Greta 44 vs. 44</p> <p>There were no significant differences in self-reported loneliness and the number of social contacts.</p> <p>Most participants reported expressed increased independence when using SIBAs.</p> <p>Independence results</p> | <p>Limitations (author):</p> <p>The study results could have been biased by the first author, who also participated in data collection.</p> <p>Limitations (review team):</p> <p>Evidence gaps:</p> <p>Funding resources:</p> <p>It was supported by the European Union's Atlanta Bosnia Programme, the Strategic Research programme in Care Science, Umea University, the Swedish Research Council's Linnaeus Grant.</p> <p>Applicable to UK?</p> <p>Yes</p> |

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| | | <p>Sven 38</p> <p>Marie 36</p> <p>Bengt 37</p> <p>Greta 44</p> <p>Study power:</p> <p>Not applicable.</p> <p>Intervention delivery:</p> <p>A mutually agreed intervention and individual assignments were decided on for each week depending on participant progress. The assignment could be to reply to a message using Facebook, call a friend using Skype, visit a forum regularly, or draw a social network map.</p> <p>The individual meetings were usually held in the participants' homes and occasionally at the OT's workplace or via an online video call once a week for 1-2h.</p> | | <p>Not applicable</p> <p>Attrition:</p> <p>0%</p> | |
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Mountain et al., 2014

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| <p>First author and year:</p> <p>Mountain 2014</p> <p>Country of study:</p> <p>UK</p> <p>Aim of study:</p> <p>To evaluate the effectiveness and cost-effectiveness of a telephone befriending intervention compared with usual health and social care provision for the maintenance of health-related quality of life and subjective well-being in community-based older people</p> <p>Study design:</p> <p>RCT, pilot study</p> <p>Quality score:</p> <p>++</p> <p>External validity score:</p> <p>++</p> | <p>Setting:</p> <p>Participants recruited from general practices for a telephone-based support initiative delivered in UK</p> <p>Participants:</p> <p>Community-dwelling older adults (mean age: 82 and 80 in the intervention and control group respectively)</p> <p>Inclusion:</p> <p>Community-dwelling older adults aged 75 or over who had good cognitive function, lived independently (alone or with others) or in sheltered housing could converse in English</p> <p>Exclusion (reasons listed):</p> <p>Individuals who could not use a telephone even if provided with appropriate assistive technology, who lived in residential/nursing care homes, those who suffered from cognitive decline and who were already receiving telephone interventions</p> <p>Motivation/ referral/ payment:</p> <p>General practices sent brief study information and invitations to contact the research team to their clients. Invitations were also sent to participants of an existing longitudinal observational study who had consented to be contacted</p> | <p>Method of allocation:</p> <p>By centralised web-based randomisation service that allocated participants to either the intervention or control condition</p> <p>Intervention(s):</p> <p>Telephone befriending intervention, led by volunteers</p> <p>Initial one-to-one befriending involved 10- to 20-minute calls once per week for up to 6 weeks made by the volunteer befriender to an allocated participant. One-to-one calls aimed to familiarize the participant with the volunteer, conduct everyday conversation and prepare participants for the telephone friendship groups</p> <p>The friendship groups consisted of up to 6 participants and involved 1 hour teleconferences, at a pre-arranged time, once per week for 12 weeks facilitated by the same volunteer as had conducted one-to-one befriending</p> <p>Friendship groups did not aim to induce behaviour change but to reduce social isolation by providing a safe environment for building relationships, sharing experiences, companionship and support</p> <p>Control:</p> <p>No intervention - Usual health and</p> | <p>Mental wellbeing measures:</p> <p>Mental wellbeing: The Short Form Health Instrument (SF-36), mental health (MH) dimension Functional health and well-being: Other dimensions of the SF-36 Subjective wellbeing: The Office for National Statistics (ONS) approach (Tinkler & Hicks, 2011) Optimistic self-beliefs about the ability to cope with difficult life: General Perceived Self Efficacy (GSE) scale (Schwarzer & Jerusalem, 1995) Loneliness: The De Jong Gierveld Loneliness Scale (de Jong Gierveld & Kamphuls, 1985)</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>Health status: The Euro QoL 5-Dimension (EQ-5D, Brazier et al., 2007) ; Depression: The Patient Health Questionnaire (PHQ-9, Spitzer et al., 1995)</p> <p>Socio-demographic characteristics</p> <p>Follow-up periods:</p> <p>At baseline and at 6-months post-randomisation</p> <p>Method of analysis:</p> | <p>Wellbeing results</p> <p>The mean SF-36 MH score at 6 months post-randomisation was 77.5 (SD 18.4) in the intervention group and 70.7 (SD 21.2) in the control group, a non-significant mean difference of 6.5 (95% CI, -3.0 to 16.0) or 9.5 (4.5 to 14.5), adjusting for age, sex and baseline scores. Also for the other dimensions of the SF-36, the differences in quality of life favoured the intervention group (i.e. role physical, bodily pain, social functioning, physical component summary and mental component summary) but showing no significant results. There were no differences in mean scores between the intervention and control groups, observed for the other measures used, except for the ONS wellbeing total score (mean difference 0.8 (95 % CI 0.2 to 1.4))</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>Participants: 56/157 (36 %)</p> | <p>Limitations (author):</p> <p>High attrition rate</p> <p>Early closure of the main trial resulting in not undertaking planned analysis, e.g. a cost-effectiveness analysis</p> <p>Limitations (review team):</p> <p>Pilot study with preliminary study design and presented results</p> <p>Evidence gaps:</p> <p>Well-conducted studies evaluating theoretically informed interventions to alleviate loneliness and reduce social isolation in older people are needed</p> <p>Funding resources:</p> <p>The Public Health Research programme (PHR 09/ 3004/01)</p> <p>Applicable to UK?</p> <p>Yes, the study originates from UK</p> |
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| | <p>about further research Invitations were also issued to local NHS, social care and third sector organisations who agreed to distribute them</p> <p>The group intervention was preceded by using one-to-one telephone befriending to encourage participants to join telephone friendship groups</p> | <p>social care provision</p> <p>Sample sizes:</p> <p>Assessed for eligibility: N=178</p> <p>Randomised: N=157</p> <p>Baseline data: N=78 (intervention) N=79 (control)</p> <p>Baseline comparisons:</p> <p>Not reported</p> <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>The intervention was led by trained volunteers The volunteers leading the intervention were recruited by a local franchise of a national UK charity dedicated to improving the lives of older people (Age UK)</p> <p>Target group:</p> <p>Community-dwelling older adults</p> | <p>The analysis was largely descriptive and focused on confidence interval estimation</p> <p>A marginal general linear model (GLM) with robust standard errors and an exchangeable correlation to compare the mean SF-36 MH scores from the treatment and control groups were used</p> <p>A 95% CI for the between-arm difference in scores was reported</p> | | |
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| Newall et al., 2013 | | | | | |
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| <p>First author and year:</p> <p>Newall 2013</p> <p>Country of study: Canada</p> <p>Aim of study:</p> <p>To examine whether The Seniors Centre Without Walls (SCWOW) program was reaching its target population and to gather participant feedback about program implementation and perceived satisfaction and impact</p> <p>Study design:</p> <p>Uncontrolled before and after study</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>+</p> | <p>Setting:</p> <p>SCWOW program delivered in Manitoba, Canada</p> <p>Participants:</p> <p>Older adults in Manitoba, Canada; 92% females; aged 57-85 years (mean age: 71)</p> <p>Inclusion:</p> <p>All individuals taking part in SCWOW sessions were eligible (<i>N</i> = 62)</p> <p>Exclusion (reasons listed):</p> <p>None listed</p> <p>Motivation/ referral/ payment:</p> <p>Not applicable</p> | <p>Method of allocation:</p> <p>Not applicable</p> <p>Intervention(s):</p> <p>The SCWOW program offering social and educational sessions Sessions are offered at specific times and are facilitated by invited guests, health professionals, or staff and volunteers Participants are linked on the telephone, calling in for particular sessions at a set time, with a session leader</p> <p>Control:</p> <p>No control group</p> <p>Sample sizes:</p> <p>Assessed for eligibility: N= 26</p> <p>Randomised: Not applicable</p> <p>Baseline data: N=26</p> <p>Baseline comparisons:</p> <p>Most participants (73.1%) lived alone About 38% of the participants had some high school education or</p> | <p>Mental wellbeing measures:</p> <p>Loneliness Social isolation and meaningful social contact</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>Sociodemographic variables Health and limitations (general health, serious health problem, limitations in what participants would like to do by their health, income, or residence location) program feedback</p> <p>Follow-up periods:</p> <p>Telephone interviews were conducted with participants near the end of each 4-month term</p> <p>Method of analysis:</p> <p>Quantitative and qualitative content analysis</p> | <p>Wellbeing results</p> <p>Participants were satisfied with the program and reported that SCWOW had several positive effects (e.g., connecting to the larger community, affecting mental well-being) No barriers to participation were identified The study suggests that telephone-based programs can successfully reach socially isolated older adults No statistics with significance levels were reported</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>3/26 (10 %)</p> | <p>Limitations (author):</p> <p>No control condition – no causal relationships measured Small sample No validated measures used Only self-reported measures Younger older adults (below 60 years of age) and men not well represented</p> <p>Limitations (review team):</p> <p>No control group</p> <p>Evidence gaps:</p> <p>Research specifically targeting older men and their participation in social programs is scarce Further development programming designed to facilitate friendship formations</p> <p>Funding resources:</p> <p>Canadian Institute of Health Research (CIHR) Post-Doctoral Award in the area of Longitudinal Study on Aging, Social Sciences and Humanities Research Council of Canada (SSHRC) Community University Research Alliance grant (no. 833-2007-1013)</p> <p>Applicable to UK?</p> |

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| | | <p>had completed high school, 61.5% had some university or a university degree Participants reported that their income met their needs “with difficulty” Although people generally reported having “good” health, most people (69%) had at least one health problem that they considered serious (e.g., hip problems, eyesight loss) 42 % of the sample was socially isolated and more than half reported being lonely</p> <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>The project was completed in collaboration with the non-profit organization Age & Opportunity, Winnipeg, Manitoba</p> <p>Target group:</p> <p>Socially isolated older adults</p> | | | <p>Yes</p> |
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| Shapira et al., 2007 | | | | | |
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| <p>First author and year:</p> <p>Shapira 2007</p> <p>Country of study: Israel</p> <p>Aim of study:</p> <p>To test the psychological impact of learning how to use computers and the Internet in old age on well-being and personal sense of empowerment</p> <p>Study design:</p> <p>Quasi-experimental study</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>+</p> | <p>Setting:</p> <p>Program delivered in a day care centre context in Israel</p> <p>Participants:</p> <p>Older adults in Israel (mean age of 80) who went to day-care centres for the elderly or resided in nursing homes</p> <p>Inclusion:</p> <p>Sufficient cognitive capability (as reported by permanent sites' staff who knew participants closely) to participate in the offered activity</p> <p>Exclusion (reasons listed):</p> <p>None listed</p> <p>Motivation/ referral/ payment:</p> <p>Recruited based on their willingness to participate and interest in the different activities organised</p> | <p>Method of allocation:</p> <p>Not applicable</p> <p>Intervention(s):</p> <p>Course in computer operation and Internet browsing</p> <p>The program lasted 15 weeks and included one or two lessons per week, each approximately 60 minutes long</p> <p>Control:</p> <p>A comparison group with participants engaging in other activities</p> <p>Sample sizes:</p> <p>Assessed for eligibility:</p> <p>N=22 (intervention)</p> <p>N=26 (control)</p> <p>Randomised:</p> <p>Not applicable</p> <p>Baseline data:</p> <p>N=22 (intervention)</p> <p>N=26 (control)</p> <p>Baseline comparisons:</p> | <p>Mental wellbeing measures:</p> <p>Life satisfaction: Life-satisfaction scale (LSS)</p> <p>Perceived control: Sense of Mastery Scale</p> <p>Life quality: Self-Anchoring Scale (SAS)</p> <p>Depression: Depressive adjective checklist</p> <p>Loneliness: UCLA loneliness scale</p> <p>Perceived control</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>Computer use</p> <p>Physical functioning</p> <p>Follow-up periods:</p> <p>At pre- and post-intervention four months after the interventions</p> <p>Method of analysis:</p> <p>ANCOVA was employed for controlling the effects of control variables and pre-intervention differences on participants who completed the activities</p> | <p>Wellbeing results</p> <p>The study evidenced significant differences between the intervention and the comparison groups in all mental health and wellbeing measures: Higher levels of life satisfaction (F = 39.94; df= 1:33; p<0.001; $\eta^2=0.55$); sense of control (F = 13.22; df= 1:33; p<0.001; $\eta^2=0.29$) and life quality (F = 7.42; df= 1:33; p<0.01; $\eta^2=0.18$) and significantly lower levels of depression (F = 10.00; df= 1:33; p<0.01; $\eta^2=0.23$) and feeling of loneliness (F = 34.71; df= 1:33; p<0.001; $\eta^2=0.51$). Only for physical difficulties the comparison was found to be not statistically significant (F = 2.24; df= 1:33; $\eta^2=0.06$)</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>9/48 (19 %)</p> | <p>Limitations (author):</p> <p>Small sample size</p> <p>The intervention sample consisted of a motivated group, which may have biased the outcomes</p> <p>Limitations (review team): Likely to be biased with high rate of attrition</p> <p>Evidence gaps:</p> <p>A closer examination of the dynamics of personal change prompted by computer and Internet use is warranted</p> <p>Funding resources:</p> <p>This project was supported by a grant from Myers-JDC-Brookdale Institute of Gerontology and Human Development; Eshel, The Association for the Planning and Development of Services for the Aged in Israel and the Fraenkel Family Fund</p> <p>Applicable to UK?</p> <p>Yes</p> |

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| | | <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>The teaching was carried out in specially dedicated rooms The instructors, veteran teachers in the use of computers and Internet, were especially experienced in working with older people. They were assisted by volunteers, who provided participants with additional help and guidance when needed</p> <p>Target group:</p> | | | |
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Slegers et al., 2007 (and parallel publications in 2008 and 2012)

| First author and year: | Setting: | Method of allocation: | Mental wellbeing measures: | Wellbeing results | Limitations (author): |
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| <p>Slegers 2007, 2008, 2012</p> <p>Country of study:</p> <p>The Netherlands</p> <p>Aim of study:</p> <p>To examine the causal relationship between computer use and measures of wellbeing, activity and autonomy</p> <p>Study design:</p> <p>RCT</p> <p>Quality score:</p> <p>++</p> <p>External validity score:</p> <p>+</p> | <p>Computer use training course in Maastricht, the Netherlands</p> <p>Participants:</p> <p>Healthy community-dwelling older adults aged between 64 and 75 years</p> <p>Inclusion:</p> <p>Healthy older adults</p> <p>Exclusion (reasons listed):</p> <p>General mental functioning in a range that might be indicative of a cognitive disorder (score < 24 on the Mini-Mental State Examination, MMSE) Participants with no prior active computer experience</p> <p>Motivation/ referral/ payment:</p> <p>Not reported</p> | <p>Two-phase randomization procedure</p> <p>Intervention(s):</p> <p>Training including 3 4-hour training sessions over the period of 2 weeks Computer instructors guided the sessions</p> <p>Control:</p> <p>No training– no intervention group No interest in computer use group</p> <p>Sample sizes:</p> <p>Assessed for eligibility:</p> <p>N=366</p> <p>Randomised:</p> <p>N= 236</p> <p>Baseline data:</p> <p>Training and intervention group (n= 62) Training – no intervention group (n=61)No training– no intervention group (n= 68) No interest in computer use group (n= 45)</p> <p>Baseline comparisons:</p> <p>At baseline the groups did not differ with respect to</p> | <p>Social well-being: the loneliness questionnaire (De Jong-Gierveld & Kamphuis, 1986) Nature and frequency of participants' social networks Emotional well-being: Psychological component of the SF-36 Locus of control: Belief in External Control scale (Andriessen, 1972) Perceived level of control in life: Mastery scale (Pearlin & Schooler, 1978) Mood: 3 subscales of the 90-item Symptom Check List (SCL-90; Arrindell & Ettema, 1986)</p> <p>Independence measures:</p> <p>Autonomy: 3 measures of (perceived) autonomy</p> <p>Other measures:</p> <p>Engagement in various activities and volunteer work</p> <p>Measures of computer use</p> <p>Physical well-being: Physical component of the 36-item Short-Form Health Survey (SF-36)</p> <p>Follow-up periods:</p> <p>At baseline, after 4 and 12 months</p> | <p>No significant group X time interaction effects for any of the groups for any measure.</p> <p>Evidenced differences in changes over time in the frequency of contacting people $\chi^2(2, n=44)=7.93, p=.02$ in the training – no intervention group – with no significant impacts on other groups.</p> <p>Participants in the no-intervention groups also considered themselves to be less active at the follow-ups (4 and 12 months) compared to baseline $\chi^2(2, n=50) =17.27, p<.01$.</p> <p>Significant interaction effects were found between extent of computer use and time for the sense of mastery outcome ($F(2, 48) = 3.31, p= .04$, showing that between baseline and the 12-month follow-up, heavy computer users showed an increase on the Mastery scale - whereas light users showed a significant decrease ($p=.01$).</p> <p>Also, some significant changes over time were evidenced for the frequency of meeting people – the light computer users showed an increase between baseline and the 4-month follow-up and a decrease after the 4-month follow-up, with $\chi^2(2, n =24) =8.23, p =.01$. For time spent on hobbies heavy computer users showed an increase over all time intervals, ($Q(2, n = 24) = 6.33,$</p> | <p>Self-reported measures used</p> <p>Limitations (review team):</p> <p>Evidence gaps:</p> <p>Future research should aim at identifying populations more sensitive to Internet-based interventions</p> <p>Funding resources:</p> <p>The Dutch Research Council (NWO: 014-91-048) and the Faculty of Psychology, University Maastricht</p> <p>Applicable to UK?</p> <p>Yes</p> |

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| | | <p>demographic variables</p> <p>Baseline comparisons of the outcome variables showed differences in belief in external control and time spent on light sports</p> <p>We found differences between interested and not interested participants for the anxiety scale of the SCL-90: the former showed less anxiety</p> <p>Baseline comparisons of participants who dropped out of the study with participants who did not showed differences in level of education, with lower levels for dropouts; in the belief in external control, also with lower levels for dropouts; and the time spent on shopping, cooking, and doing personal care, with dropouts spending more time on these activities</p> <p>Study power:</p> <p>Powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>Not reported</p> <p>Target group:</p> <p>Healthy older adults living independently</p> | <p>Method of analysis:</p> <p>Analyses of variance and chi-square tests on all dependent variables</p> <p>General linear model with a repeated-measures analysis of variance</p> | <p>p=.04)</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>32/236 (14 %)</p> | |
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| Studenski et al., 2010 | | | | | |
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| <p>First author and year:</p> <p>Studenski 2010</p> <p>Country: USA</p> <p>Aim of study:</p> <p>To assess health older adults' interests and participation in interactive video dance games adapted for older people.</p> <p>Study design:</p> <p>Before and after study</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> | <p>Setting:</p> <p>Three senior living centres in the USA</p> <p>Participants:</p> <p>Mean age 80.1+5.4 years, 83% women</p> <p>Inclusion:</p> <p>People aged 65 and above with ability to walk half mile and without medical problems such as chest pain at rest or during physical activity and with no histories of hospitalization to A&E for the last 6 months, no history of falls and bone fracture</p> <p>Exclusion (reasons listed):</p> <p></p> <p>Motivation/ referral/ payment:</p> <p>Permission to participate was obtained from their physicians.</p> | <p>Method of allocation:</p> <p>Uncontrolled and unblinded</p> <p>Intervention(s):</p> <p>Three months of training and supervision using a video dance game particularly targeted at older people</p> <p>Control:</p> <p>No control</p> <p>Sample sizes:</p> <p>36</p> <p>Assessed for eligibility:</p> <p>Randomised:</p> <p>Baseline data:</p> <p>SF 36 mental component summary: 52.7±7.9 for completers and 50.4±10.5 for non completers (p=0.73)</p> <p>Baseline comparisons:</p> <p></p> <p>Study power:</p> <p>Unknown</p> <p>Intervention delivery: each site was led by a trained coordinator</p> <p>Target group: healthy older people, who volunteered to take part in.</p> | <p>Mental wellbeing measures:</p> <p>SF-36 mental components</p> <p>Independence measures:</p> <p>NA</p> <p>Other measures:</p> <p>Systolic blood pressure, diastolic blood pressure, BMI, SPPB balance, walk, chair rise, Narrow walk time (seconds), DSST, SF-36 physical component, balance confidence.</p> <p>Follow-up periods:</p> <p>Three months</p> <p>Method of analysis:</p> <p>Wilcoxon signed rank tests for making comparisons between pre= and post-dance measurements to assess the significance of change.</p> | <p>Wellbeing results</p> <p>SF-36 mental components: 3.9±8.2 (P=0.0180)</p> <p>Completers reported improvement in self- reported mental health.</p> <p>Independence results</p> <p>NA</p> <p>Attrition: 10/35 (28.5%)</p> | <p>Limitations (author):</p> <p>No control group</p> <p>There are differences between the balance tasks trained during the game and in the Short Physical Performance Battery Score (dynamic vs. static).</p> <p>Limitations (review team):</p> <p></p> <p>Evidence gaps:</p> <p></p> <p>Funding resources:</p> <p>The study was funded by Humana Inc.</p> <p>Applicable to UK?</p> <p>Yes</p> |

| Torp et al., 2008 | | | | | |
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| First author and year: | Setting: | Method of allocation: | Mental wellbeing measures: | Wellbeing results | Limitations (author): |
| <p>Torp (2008)</p> <p>Aim of study:</p> <p>To explore whether family carers were able to make use of the ICT-based intervention to gain increased knowledge about the cared-for person's illness, caring and coping. To investigate if the intervention enabled them to establish an informal support network. To examine if the intervention helped to reduce carer stress and mental health problems.</p> <p>Study design:</p> <p>Uncontrolled before and after study</p> <p>Quality score:</p> <p>+</p> <p>External validity score: -</p> | <p>Participant families homes;</p> <p>The focus group interviews were conducted in a rehabilitation centre;</p> <p>A call centre run by experienced health personnel</p> <p>Participants:</p> <p>Elderly spousal carers were recruited from two, mixed urban-rural, municipalities in eastern Norway.</p> <p>Inclusion:</p> <p>All selected participants had to meet the following criteria: (i) close relative of an elderly person with a diagnosis of dementia or stroke living in the same household who (ii) wished to continue caring for the relative at home, (iii) were approximately 60 years of age or older, (iv) had preferably been a carer for less than 2 years, (v) were not an advanced ICT user, and (vi) had Norwegian as their first language.</p> <p>Exclusion (reasons listed):</p> <p>No</p> <p>Motivation/ referral/ payment:</p> <p>Most of the couples were referred to the project from general practitioners, hospital physicians,</p> | <p>Not applicable</p> <p>Intervention(s):</p> <p>Three 3-hour classes, over a 3-week period and administered in groups of 3-6 carers.</p> <p>A discussion forum was set up in which participants could provide information, pose questions and receive answers from other participants in the network either on-line or using a videophone.</p> <p>After a couple of months - 3 hours of additional training on how to use and collect information from the Internet</p> <p>A call centre run by experienced health personnel was established to provide help related to the use of the ICT and receiving a professional advice and support.</p> <p>Control:</p> <p>No no-intervention control</p> <p>Sample sizes:</p> <p>Nineteen elderly spousal carers</p> <p>Assessed for eligibility:</p> <p>The couples referred to the project were all interviewed by a project nurse in their own home regarding</p> | <p>Carers' <u>social contacts</u> (measured by the Family and Friendship Contacts scale); <u>burden of care</u> (measured by the 15-item Relative Stress scale); <u>social support</u> was measured with a 20-item scale, and <u>mental health</u> was measured with the 20-item version of the General Health Questionnaire (GHQ-20).</p> <p>Knowledge about chronic disease and caring, stress and mental health and use of ICT (examined via a composite carer questionnaire).</p> <p>Independence measures:</p> <p>None</p> <p>Other measures:</p> <p>Use of ICT –based services through data collected from focus group interviews.</p> <p>Follow-up periods:</p> <p>Quantitative data collected immediately prior to the study and at 12 months.</p> <p>Qualitative data via focus group interviews with participant carers at 7 months.</p> | <p>At follow-up, quantitative measures did not reveal any reduction in carer stress or mental health problems. However, carers reported extensive use of the ICT service, more social contacts and increased support and less need for information about chronic illness and caring.</p> <p>Contact with and support from other carers with similar experiences was particularly valued by participants.</p> <p>The intervention also enhanced contacts with family and friends outside the carer network.</p> <p>Independence results</p> <p>Not applicable</p> <p>Attrition:</p> <p>At follow-up (12 months later) all 19 carers took part in a focus group interview, and 18 filled out the questionnaire.</p> | <p>Small sample and not a randomised controlled study</p> <p>Possible that in a focus group context some participants may have withheld some sensitive information due to group pressure</p> <p>Some carers experienced that their spouse was negative to their use of the ICT equipment and their contact with other carers. This may increase strain among both carers and the persons they care for.</p> <p>Due to the small-scale nature of the study, it is not possible to determine which of the intervention's multiple dimensions were the most effective with regards to the outcomes of the study, and for whom.</p> <p>Limitations (review team):</p> <p>Limited involvement of cared-for persons' in both the use of ICT and the social activities</p> <p>Evidence gaps: Not stated</p> <p>Funding resources:</p> <p>The study was supported by the Directorate for Health and Social Affairs and the Norwegian Association of Local and Regional Authorities.</p> |

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| | <p>and community care nurses.</p> <p>Several were self-referred, having learned about the project from a local voluntary organization and/or newspaper advertisement.</p> <p>The participants did not pay for the equipment, the internet, or any of the other activities.</p> | <p>background variables and the eligibility criteria.</p> <p>Randomised:</p> <p>Not applicable</p> <p>Baseline data:</p> <p>N=19</p> <p>In the baseline interview the project nurse collected information regarding age, housing, education, occupation, public services, and when the cared-for person received their current diagnosis.</p> <p>The self-administered carer questionnaire contained questions regarding ICT use, knowledge about chronic disease and caring, social network, social support, and mental health.</p> <p>Baseline comparisons:</p> <p>Carer's mean scores with regards to knowledge about disease and caring; social contacts; social support; carer stress; and mental health problems from baseline to follow-up one year later.</p> <p>Study power:</p> <p>A power calculation was not estimated as due to funding constraints it was only feasible to recruit a maximum of 20 carers.</p> <p>Intervention delivery:</p> <p>A call centre was run by run by experienced health personnel. Participant carers had monthly group meetings together with the</p> | <p>Method of analysis:</p> <p>The data from the focus group interviews were content analysed together with the observation and reflection notes taken during and immediately after the interviews.</p> <p>Descriptive statistics, Cronbach's α-values; and Wilcoxon signed ranks test.</p> | | <p>Applicable to UK?</p> <p>Yes</p> |
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| | | <p>staff at the call centre.</p> <p>Every second month these meetings were 'formal' with an agenda, such as discussions about how the project was progressing and suggestions for further improving the service.</p> <p>Professionals were sometimes invited to the meetings to lecture on topics that were of interest to the carers.</p> <p>The carers agreed on the frequency of the meetings and the agenda for each meeting. At the carers' specific request, the meetings were purely for carers.</p> <p>The cared-for persons were invited along with their carer to attend informal social gatherings with other participant families that were held twice a year.</p> <p>Target group: carers</p> | | | |
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| Torp et al., 2013 | | | | | |
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| <p>First author and year:</p> <p>Torp (2013)</p> <p>Country of study:</p> <p>Norway</p> <p>Aim of study:</p> <p>To investigate whether Safety Net participants (includes different groups of informal carers) could make use of ICT to gain increased knowledge about caring and coping and</p> <p>To determine whether this intervention would enable them to establish informal support networks and thereby adapt and self-manage their situation.</p> <p>Study design: Uncontrolled before and after study</p> <p>Quality score:</p> <p>-</p> <p>External validity score: +</p> | <p>Setting:</p> <p>Vestfold County in Norway</p> <p>Participants:</p> <p>79 informal carers invited to take part. 17 did take part</p> <p>Inclusion:</p> <p>Eligibility criteria: (i) living in the same household as the person in need of care; (ii) wishing to continue caring for their relative at home; (iii) willing to cover the cost of the equipment needed to access the services provided by Safety Net, that is, a modern broadband-linked personal computer with a web camera and Internet connection; (iv) willing to take part in meetings with other carers in the network; and (v) having Norwegian as a first language.</p> <p>Exclusion (reasons listed):</p> <p>Motivation/ referral/ payment:</p> <p>No one uniform approach was used to recruit potential carers. Participants were recruited through different channels including community care nurses, general practitioners, rehabilitation settings, hospitals, and various voluntary organizations.</p> | <p>Method of allocation:</p> <p>Intervention(s):</p> <p>Safety Net intervention</p> <p>Control:</p> <p>No</p> <p>Sample sizes:</p> <p>Assessed for eligibility:</p> <p>Randomised:</p> <p>Baseline data:</p> <p>Not applicable</p> <p>Baseline comparisons:</p> <p>Study power:</p> <p>Intervention delivery:</p> <p>Individuals trained in the use of ICT and Safety Net</p> <p>Carers were able to maintain contact with each other by using a web camera and through group meetings</p> <p>After 12 months, 17 informal carers participated in focus group interviews and completed a short questionnaire.</p> <p>Target group: Informal carers</p> | <p>Mental wellbeing measures:</p> <p>None stated</p> <p>Independence measures:</p> <p>None stated</p> <p>Other measures:</p> <p>Data collected about use of Safety Net including frequency of use, types of components used, and participants' satisfaction with the intervention.</p> <p>Follow-up periods:</p> <p>Method of analysis:</p> <p>Descriptive statistics; t-test</p> <p>Content analyses</p> | <p>Wellbeing results</p> <p>Independence results</p> <p>Other measures:</p> <p>The data was analysed by testing the differences in scores between the experienced (N=6) and novice (N=9) Safety Net participants. The results showed that experienced participants used five different components extensively (mean score=5.3(SD=1.1)). The average score on the five different components of Safety Net for novice group was 2.9 (SD=0.8). All the experienced older participants rated the maximum satisfaction with Safety Net (7 out of 7-point scale) while the novice participants scored M=3.8 (SD=1.3). The differences between the two groups were significant for satisfaction with Safety Net (p<0.001), overall use of Safety Net (p<0.001), and use of web camera and discussion forum (p<0.001) respectively.</p> <p>Attrition:</p> | <p>Limitations (author):</p> <p>Small sample size</p> <p>Eight participants had participated in the pilot project preceding Safety Net.</p> <p>Limitations (review team): No specific focus on wellbeing/independence measures</p> <p>Evidence gaps:</p> <p>Funding resources:</p> <p>Applicable to UK?</p> <p>Yes</p> |

| White et al. 2002 | | | | | |
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| First author and year: | Setting: | Method of allocation: | Mental wellbeing measures: | Wellbeing results | Limitations (author): |
| White (2002) | Four congregate housing ² sites and two nursing facilities | Participants randomly assigned to either intervention or control group | (i)UCLA Loneliness scale (Lower score = less lonely; range: 20–60, 20 items) | Although there was a trend toward decreased loneliness and depression in intervention subjects compared to controls, there were no statistically significant changes from baseline to the end of trial between groups. | Extended follow-up period may be needed to capture the full effect of the intervention; |
| Country of study: | Participants: | Intervention(s): | (ii) Modified CES Depression scale (Lower score = less depressed; range: 0–20, 10 items) | | Possible inadequate targeting of the intervention to those most likely to benefit; |
| US | 100 participants (15% were African-American and 2% were Hispanic). | Internet training | (iii) Perceived Control scale (Lower score = less control; range: 8–32, 8 items) | At the end of the trial, 60% of the intervention group continued to use the Internet on a weekly basis. | Perhaps a need for a more intense intervention; |
| Aim of study: | Inclusion: | Control: | (iv) Life satisfaction (very satisfying, fairly satisfying; moderately satisfying; somewhat satisfying; and not satisfying) | Among Internet users (n = 29) in the intervention group there were trends toward less loneliness, less depression, more positive attitudes toward computers, and more confidants than among intervention recipients who were not regular users (n = 19) of this technology. | Include an automatic computer measure of Internet time to more accurately track individual participants' use. |
| To determine the psychosocial effects of providing Internet access to older adults | All residents of these communities were eligible to participate. At the nursing facilities health care personnel were asked to identify residents whom they thought had the cognitive ability to participate. | Yes | | | |
| Study design: | Exclusion (reasons listed): | Sample sizes: | Independence measures: | Independence results | Limitations (review team): ? |
| Randomised controlled trial | Excluded as they lacked the cognitive ability to take part in the study? | 100 participants entered the trial | | | |
| Quality score: | Motivation/ referral/ payment: | Assessed for eligibility: | Other measures: | Attrition: | Evidence gaps: |
| + | Information sessions open to all residents on the general use of computers and the Internet were provided at each facility. | Health care personnel identified residents whom they thought had the cognitive ability to participate. | (i) Attitudes Toward Computers scale (Lower score = more favourable attitude; range: 9–36, 9 items); | Out of 51 participants randomized to the intervention group 9 dropped out of the training but completed the follow-up interview. Reasons for | |
| External validity score: - | Volunteers were sought at these | Randomised: | (ii) Number of confidants | | Funding resources: |
| | | At each of the six sites individual participants were randomly assigned to either intervention or control group. | | | Not reported |
| | | 51 participants randomised to the intervention group. | | | |

² Congregate Housing is a shared living environment designed to integrate the housing and services needs of elders and younger disabled individuals. The goal of Congregate Housing is to increase self-sufficiency through the provision of supportive services in a residential setting. Congregate Housing is neither a nursing home nor a medical care facility.
<http://www.mass.gov/elders/housing/congregate-housing/>

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| | sessions and through posted flyers. | <p>49 participants randomised to the control group</p> <p>Baseline data:</p> <p>1)Age 2) Gender 3) Living situation 4) Educational level 5) Self-rated health 6)Activity limitation due to health 7) IADL assistance 8)ADL assistance 9) Marital status 10) Work status 11) Living environment 12)Experience with computers 13) PC ownership</p> <p><i>Outcomes measures</i></p> <p>(i) UCLA Loneliness scale (ii) Modified CES Depression scale (iii)Perceived Control scale (iv) Attitudes Toward Computers scale (v) Life satisfaction (vi) Number of confidants</p> <p>Baseline comparisons:</p> <p>There were no statistically significant differences between the intervention and control groups on the 13 demographic variables at baseline.</p> <p>Study power:</p> <p>Intervention delivery:</p> <p>Following the baseline interview, subjects were randomly assigned to one of two study groups: (1) Internet training; or (2) wait list control. Control subjects were offered a token gift to compensate them for waiting five months for training.</p> <p>Intervention subjects received 9</p> | <p>Follow-up periods:</p> <p>Interviews were conducted at baseline and follow-up, approximately 20 weeks after training started.</p> <p>Method of analysis:</p> <p>Descriptive statistics;</p> <p>Nonparametric Wilcoxon rank sum test for continuous measures;</p> <p>Chi Square test for categorical measures;</p> <p>An intention-to-treat model of analysis was used to compare the intervention and control groups.</p> | <p>not completing training were health problems (n = 7) and insufficient time (n = 2). One participant dropped out of training and refused to complete the follow-up interview.</p> <p>1 participant died before the study ended and 1 could not be tested at the time of the follow-up interview due to progression of physical illness. A total of 39 intervention participants (76% of the initial 51) completed training and the follow-up interview after five months.</p> <p>A total of 48 intervention participants (94% of the initial 51) were used in the statistical analysis, including nine who dropped out of training.</p> <p>Of the 49 participants randomized to the control group, 1 died, 1 moved away, and 2 were not tested at the time of the follow-up interview. Therefore, 45 control participants (92% of the initial 49) were included in the statistical analysis.</p> | <p>Applicable to UK?</p> <p>Yes</p> |
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| | | <p>hours of group training (3 two-hour sessions and 3 one-hour sessions, with 2 elderly participants per computer with 4-6 in a class) over a two-week period, which covered basic computer operation, use of e-mail, and an introduction to accessing the www.</p> <p>Computers were available for continued use over five months and the trainer was available 2 hours/week for questions.</p> <p>To avoid contamination, members of the intervention group were asked not to share what they were learning with members of the control group. Also, control group members were not provided access to the computer equipment.</p> <p>Interviews were conducted by two trained interviewers, at baseline and follow-up, approximately 20 weeks after training started.</p> <p>Target group:</p> <p>Older people without internet access</p> | | | |
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| Woodward et al., 2011 (with follow up in 2013) | | | | | |
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| <p>First author and year:</p> <p>Woodward 2011/2013</p> <p>Country of study:</p> <p>USA</p> <p>Aim of study:</p> <p>To test a peer tutor model (Technology and Aging Project, TAP) to teach adults aged 60 and older how to use information and communication technologies (ICTs)</p> <p>Study design:</p> <p>Randomised controlled trial in 2011 with exploratory quasi-experimental follow up in 2013.</p> <p>Quality score:</p> <p>-</p> <p>External validity score:</p> <p>-</p> | <p>Setting:</p> <p>ICT usage training course targeting healthy older adults living independently in Michigan, US</p> <p>Participants:</p> <p>Healthy older adults living independently (mean age: 72 years). 72% female.</p> <p>Mean age of the peer tutors in 2013 follow up was 66.5</p> <p>Inclusion:</p> <p>Healthy older adults aged over 60 living independently</p> <p>Exclusion (reasons listed):</p> <p>Not listed</p> <p>Motivation/ referral/ payment:</p> <p>Not applicable</p> | <p>Method of allocation:</p> <p>Not applicable</p> <p>Intervention(s):</p> <p>ICT usage training intervention with peer tutors</p> <p>Bi-weekly for a total of 11 sessions plus an additional tutorial session for beginners. In 2013 follow up delivered by peers – maximum of 20 sessions.</p> <p>Control:</p> <p>Former intervention group with no tutors</p> <p>Sample sizes:</p> <p>Assessed for eligibility:</p> <p>Randomised:</p> <p>Yes</p> <p>Baseline data:</p> <p>Experimental group: 45</p> <p>Control Group: 38</p> <p>In 2013 follow up 19 individuals from control group became an intervention group and were taught by 6 peers who had been in the experimental group in the earlier study.</p> | <p>Mental wellbeing measures:</p> <p>Social support-related outcomes; Social networks online and offline; Perceived social support measured by the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988)</p> <p>Loneliness measured by a six-item scale (De Jong Gierveld and Van Tilburg, 2006)</p> <p>Mental health-related outcomes;</p> <p>Quality of life (Flanagan, 1978). Depressive symptoms: Geriatric Depression Scale (GDS; Yesavage et al., 1982)</p> <p>Independence measures:</p> <p>Not applicable</p> <p>Other measures:</p> <p>Computer-related outcomes</p> <p>Follow-up periods:</p> <p>Baseline, 3 months, 6 months and 9 months (three months after the end of the training)</p> <p>Method of analysis:</p> <p>Mixed regression models (MRMs)</p> | <p>Wellbeing results</p> <p>Mental health and social support outcomes did not significantly change in the 2011 study.</p> <p>Mental health and social support outcomes did not significantly change in the 2013 peer delivered version of the intervention.</p> <p>Independence results</p> <p>Not applicable</p> <p>Other measures: participants did report increased competence with ICTs in the 2011 study.</p> <p>Attrition: 2011 study: 24/83: 29%. (No breakdown between intervention and control groups provided)</p> <p>No information provided for 2013 study – but participants attended on average 14.9 of 20 sessions.</p> | <p>Limitations (author):</p> <p>Initially a convenience sample randomised to intervention and control groups. Participants reported to be younger, had more education and more use of ICT than reported in a community survey.</p> <p>Limitations (review team):</p> <p>Not clear how randomisation done in 2011 study.</p> <p>No analysis in the 2013 follow up of the impacts on peer trainers.</p> <p>Evidence gaps:</p> <p>None reported</p> <p>Funding resources:</p> <p>Michigan State University Pearl J. Aldrich Faculty Research Award</p> <p>Applicable to UK?</p> <p>Potentially could be implemented</p> |

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| | | <p>Baseline comparisons:</p> <p>No significant differences reported at baseline</p> <p>Study power:</p> <p>Not powered to achieve statistical significance</p> <p>Intervention delivery:</p> <p>Otsego County Commission on Aging (OCCOA), a community agency serving older adults in Otsego County, Michigan, USA</p> <p>Target group:</p> <p>Healthy older adults living Independently</p> | | | |
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Appendix 3: Internal and External Validity Checklist

Quality Check

Section 1: Population External Validity

Is the source population or source area well described?

Is the eligible population or area representative of the source population or area?

Do the selected participants or areas represent the eligible population or area?

Section 2: Method of allocation to intervention (or comparison) (internal validity)

Allocation to intervention (or comparison). How was confounding minimised

Were interventions (and comparisons) well described and appropriate?

Was the allocation concealed?

Were participants or investigators blind to exposure and comparison?

Was the exposure to the intervention and comparison adequate?

Was contamination acceptably low?

Were other interventions similar in both groups?

Were all participants accounted for at study conclusion?

Did the setting reflect usual UK practice?

Did the intervention or control comparison reflect usual UK practice?

| | Arkoff | Bartlett | Basran | Bedding | Bernard | Blazun | Boise |
|--|--------|----------|--------|---------|---------|--------|-------|
| Is the source population or source area well described? | NR | NR | + | - | NR | + | + |
| Is the eligible population or area representative of the source population or area? | NR | NR | ++ | NR | NR | - | + |
| Do the selected participants or areas represent the eligible population or area? | NR | - | ++ | NR | NR | - | + |
| Section 2: Method of allocation to intervention (or comparison) (internal validity) | | | | | | | |
| Allocation to intervention (or comparison). How was confounding minimised | NA | NA | NA | NA | NA | NA | NA |
| Were interventions (and comparisons) well described and appropriate? | + | + | + | - | ++ | + | ++ |
| Was the allocation concealed? | NA | NA | NA | NA | NA | NA | NA |
| Were participants or investigators blind to exposure and comparison? | NA | NA | NA | NA | NA | NA | NA |
| Was the exposure to the intervention and comparison adequate? | NA | + | + | NA | NR | - | ++ |
| Was contamination acceptably low? | NA | NA | NA | NA | NA | NA | NA |
| Were other interventions similar in both groups? | + | NA | NA | NA | NA | NR | NA |
| Were all participants accounted for at study conclusion? | NR | - | ++ | ++ | ++ | ++ | - |
| Did the setting reflect usual UK practice? | NA | + | NA | NR | NA | NA | - |
| Did the intervention or control comparison reflect usual UK practice? | NA | NA | NA | NR | NA | NA | - |

| | Arkoff | Bartlett | Basran | Bedding | Bernard | Blazun | Boise |
|--|--------|----------|--------|---------|---------|--------|-------|
| Section 3: Outcomes (internal validity) | | | | | | | |
| Were outcome measures reliable? | ++ | ++ | + | NA | + | - | + |
| Were all outcome measurements complete? | NR | + | - | NA | + | + | - |
| Were all important outcomes assessed? | NR | ++ | NR | NA | - | - | + |
| Were outcomes relevant? | NA | ++ | ++ | NA | - | + | + |
| Were there similar follow-up times in exposure and comparison groups? | + | NA | NA | NA | NA | ++ | NA |
| Was follow-up time meaningful? | - | ++ | ++ | NA | NR | - | ++ |
| Section 4: Analyses (internal validity) | | | | | | | |
| Were exposure and comparison groups similar at baseline? | + | NA | NA | NA | NA | - | NA |
| Was intention to treat (ITT) analysis conducted? | NR | ++ | - | NA | + | - | - |
| Was the study sufficiently powered to detect an intervention effect (if one exists)? | NR | - | - | NA | NA | - | - |
| Were the estimates of effect size given or calculable? | ++ | ++ | ++ | NA | NA | ++ | ++ |
| Were the analytical methods appropriate? | - | - | - | NA | - | - | + |
| Was the precision of intervention effect given or calculable: were they meaningful? | + | ++ | + | NA | - | + | + |
| Section 5: Summary | | | | | | | |
| Are the study results internally valid (i.e. unbiased)? | - | - | - | NA | - | - | - |
| Are the findings generalisable to the source population (i.e. externally valid)? | - | - | + | NA | - | - | + |
| Overall quality assessment | - | - | - | - | - | - | - |

| Quality Check | Butler | Campbell 2004 | Campbell 2005 | Caprara 2013 & Fernandez Ballesteros 2005 | Cohen 2006 | Cohen 2007 | Collins |
|--|---------------|--------------------------|--------------------------|--|-----------------------|-----------------------|----------------|
| Section 1: Population External Validity | | | | | | | |
| Is the source population or source area well described? | + | - | - | - | ++ | ++ | - |
| Is the eligible population or area representative of the source population or area? | + | - | - | + | - | - | + |
| Do the selected participants or areas represent the eligible population or area? | - | + | + | + | - | - | + |
| Section 2: Method of allocation to intervention (or comparison) (internal validity) | | | | | | | |
| Allocation to intervention (or comparison). How was confounding minimised | NA | NA | NA | - | NR | NR | NA |
| Were interventions (and comparisons) well described and appropriate? | ++ | ++ | ++ | ++ | ++ | ++ | ++ |
| Was the allocation concealed? | NA | NA | NA | - | NR | NR | NA |
| Were participants or investigators blind to exposure and comparison? | NA | NA | NA | - | NR | NR | NA |
| Was the exposure to the intervention and comparison adequate? | | NA | NA | ++ | NR | NR | + |
| Was contamination acceptably low? | | NA | NA | NR | NR | NR | NA |
| Were other interventions similar in both groups? | | NA | NA | NR | NA | NA | NR |
| Were all participants accounted for at study conclusion? | ++ | NR | NR | - | + | + | NR |
| Did the setting reflect usual UK practice? | + | + | + | - | NA | NA | NA |
| Did the intervention or control comparison reflect usual UK practice? | + | + | + | + | NA | NA | NA |

| | Butler | Campbell 2004 | Campbell 2005 | Caprara 2013 & Fernandez Ballesteros 2005 | Cohen 2006 | Cohen 2007 | Collins |
|--|--------|------------------|------------------|---|---------------|---------------|---------|
| Section 3: Outcomes (internal validity) | | | | | | | |
| Were outcome measures reliable? | + | + | + | - | ++ | ++ | + |
| Were all outcome measurements complete? | - | - | - | - | + | + | NR |
| Were all important outcomes assessed? | - | - | - | - | + | + | + |
| Were outcomes relevant? | + | + | + | + | ++ | ++ | ++ |
| Were there similar follow-up times in exposure and comparison groups? | NA | NA | NA | ++ | ++ | ++ | ++ |
| Was follow-up time meaningful? | NA | NA | NA | ++ | NR | NR | NR |
| Section 4: Analyses (internal validity) | | | | | | | |
| Were exposure and comparison groups similar at baseline? | NA | NA | NA | - | - | - | NA |
| Was intention to treat (ITT) analysis conducted? | NA | NA | NA | - | NA | NA | + |
| Was the study sufficiently powered to detect an intervention effect (if one exists)? | NA | NA | - | - | - | - | NR |
| Were the estimates of effect size given or calculable? | NA | + | + | ++ | - | - | ++ |
| Were the analytical methods appropriate? | - | - | - | + | + | + | ++ |
| Was the precision of intervention effect given or calculable: were they meaningful? | NA | - | - | ++ | - | - | + |
| Section 5: Summary | | | | | | | |
| Are the study results internally valid (i.e. unbiased)? | - | - | - | - | + | + | - |
| Are the findings generalisable to the source population (i.e. externally valid)? | - | - | - | + | + | -+ | + |
| Overall quality assessment | - | - | - | - | + | -+ | - |

| Quality Check | Cook | Cornejo 2013 a,b | Cotten | Coulton | Creech 2013 Hallam 2014 | Davidson | de Medeiros |
|--|------|---------------------|--------|---------|----------------------------------|----------|----------------|
| Section 1: Population External Validity | | | | | | | |
| Is the source population or source area well described? | - | NR | - | NR | - | NR | - |
| Is the eligible population or area representative of the source population or area? | - | - | + | NR | - | + | ++ |
| Do the selected participants or areas represent the eligible population or area? | - | - | - | NR | + | NR | ++ |
| Section 2: Method of allocation to intervention (or comparison) (internal validity) | | | | | | | |
| Allocation to intervention (or comparison). How was confounding minimised | NA | NA | ++ | ++ | NA | NA | NR |
| Were interventions (and comparisons) well described and appropriate? | ++ | ++ | ++ | ++ | ++ | ++ | ++ |
| Was the allocation concealed? | NA | NA | NR | NR | NA | NA | NR |
| Were participants or investigators blind to exposure and comparison? | NA | NA | NR | - | NA | NA | + |
| Was the exposure to the intervention and comparison adequate? | + | NA | + | ++ | + | - | ++ |
| Was contamination acceptably low? | NA | NA | NR | ++ | NA | NA | ++ |
| Were other interventions similar in both groups? | NR | NA | NR | NR | NR | NR | NR |
| Were all participants accounted for at study conclusion? | - | ++ | NA | + | - | + | ++ |
| Did the setting reflect usual UK practice? | + | NA | - | ++ | + | NA | NA |
| Did the intervention or control comparison reflect usual UK practice? | + | NA | - | + | + | NA | NA |

| | Cook | Cornejo 2013 a,b | Cotten | Coulton | Creech 2013 Hallam 2014 | Davidson | de Medeiros |
|--|------|---------------------|--------|---------|----------------------------------|----------|----------------|
| Section 3: Outcomes (internal validity) | | | | | | | |
| Were outcome measures reliable? | + | - | + | ++ | + | ++ | + |
| Were all outcome measurements complete? | - | NR | - | '++ | - | + | NR |
| Were all important outcomes assessed? | + | NR | - | '++ | + | + | + |
| Were outcomes relevant? | ++ | NA | + | '++ | ++ | + | ++ |
| Were there similar follow-up times in exposure and comparison groups? | NA | NA | NA | '++ | ++ | + | ++ |
| Was follow-up time meaningful? | + | NR | NA | '+ | + | - | NR |
| Section 4: Analyses (internal validity) | | | | | | | |
| Were exposure and comparison groups similar at baseline? | NA | NA | NR | ++ | ++ | NA | ++ |
| Was intention to treat (ITT) analysis conducted? | NR | NA | NR | ++ | - | ++ | ++ |
| Was the study sufficiently powered to detect an intervention effect (if one exists)? | - | NA | NR | ++ | - | - | - |
| Were the estimates of effect size given or calculable? | + | NA | - | '++ | - | + | - |
| Were the analytical methods appropriate? | - | - | + | '++ | - | + | + |
| Was the precision of intervention effect given or calculable: were they meaningful? | + | NA | - | '+ | - | + | - |
| Section 5: Summary | | | | | | | |
| Are the study results internally valid (i.e. unbiased)? | - | - | - | '++ | - | - | + |
| Are the findings generalisable to the source population (i.e. externally valid)? | - | - | - | + | - | - | + |
| Overall quality assessment | - | - | .- | '++ | + | - | + |

| Quality Check | de Souza | Dickens | Dow | Ducharme 2011 | Ducharme 2012 | Eyigor | Fernandez Ballesteros 2004 | Fernandez Ballesteros 2005a,b |
|--|----------|---------|-----|------------------|------------------|--------|----------------------------------|-------------------------------------|
| Section 1: Population External Validity | | | | | | | | |
| Is the source population or source area well described? | + | + | NR | - | - | NR | - | - |
| Is the eligible population or area representative of the source population or area? | ++ | + | - | + | + | NR | + | + |
| Do the selected participants or areas represent the eligible population or area? | ++ | - | - | + | + | NR | + | + |
| Section 2: Method of allocation to intervention (or comparison) (internal validity) | | | | | | | | |
| Allocation to intervention (or comparison). How was confounding minimised | ++ | NA | NA | ++ | ++ | NR | - | - |
| Were interventions (and comparisons) well described and appropriate? | + | ++ | + | ++ | ++ | + | ++ | ++ |
| Was the allocation concealed? | NR | NA | NA | ++ | ++ | NR | - | - |
| Were participants or investigators blind to exposure and comparison? | NR | NR | NA | ++ | ++ | NR | - | - |
| Was the exposure to the intervention and comparison adequate? | - | + | - | ++ | ++ | NR | ++ | ++ |
| Was contamination acceptably low? | ++ | NA | NA | ++ | ++ | NR | NR | NR |
| Were other interventions similar in both groups? | NR | NR | NR | ++ | ++ | NR | NR | NR |
| Were all participants accounted for at study conclusion? | ++ | ++ | ++ | ++ | - | - | - | - |
| Did the setting reflect usual UK practice? | NA | NA | NA | NA | NA | NA | - | - |
| Did the intervention or control comparison reflect usual UK practice? | NA | NA | NA | NA | NA | NA | + | + |

| | de Souza | Dickens | Dow | Ducharme 2011 | Ducharme 2012 | Eyigor | Fernandez Ballesteros 2004 | Fernandez Ballesteros 2005 a,b |
|--|----------|---------|-----|------------------|------------------|--------|----------------------------------|--------------------------------------|
| Section 3: Outcomes (internal validity) | | | | | | | | |
| Were outcome measures reliable? | - | + | + | + | + | + | - | - |
| Were all outcome measurements complete? | + | + | + | + | + | - | - | - |
| Were all important outcomes assessed? | + | - | + | + | + | - | - | - |
| Were outcomes relevant? | + | ++ | + | + | + | + | + | + |
| Were there similar follow-up times in exposure and comparison groups? | ++ | ++ | NA | ++ | ++ | ++ | ++ | ++ |
| Was follow-up time meaningful? | ++ | + | - | ++ | ++ | - | ++ | ++ |
| Section 4: Analyses (internal validity) | | | | | | | | |
| Were exposure and comparison groups similar at baseline? | ++ | - | NA | ++ | ++ | - | - | - |
| Was intention to treat (ITT) analysis conducted? | ++ | ++ | ++ | ++ | ++ | - | - | - |
| Was the study sufficiently powered to detect an intervention effect (if one exists)? | NR | ++ | - | - | + | - | - | - |
| Were the estimates of effect size given or calculable? | ++ | ++ | - | + | + | - | ++ | ++ |
| Were the analytical methods appropriate? | ++ | ++ | - | + | + | - | + | + |
| Was the precision of intervention effect given or calculable: were they meaningful? | ++ | ++ | - | + | + | - | ++ | ++ |
| Section 5: Summary | | | | | | | | |
| Are the study results internally valid (i.e. unbiased)? | + | + | - | + | + | - | - | - |
| Are the findings generalisable to the source population (i.e. externally valid)? | + | - | - | + | + | - | + | + |
| Overall quality assessment | ++ | + | - | + | + | - | - | - |

| Quality Check | Fernandez Ballesteros 2005b | Fernandez Ballesteros 2012 | Fernandez Ballesteros 2013 | Fitzpatrick | Frieswijk | Fujiwara | Greaves |
|--|-----------------------------|----------------------------|----------------------------|-------------|-----------|----------|---------|
| Section 1: Population External Validity | | | | | | | |
| Is the source population or source area well described? | - | + | + | + | ++ | - | ++ |
| Is the eligible population or area representative of the source population or area? | + | + | + | - | ++ | NR | - |
| Do the selected participants or areas represent the eligible population or area? | + | - | - | - | ++ | NR | - |
| Section 2: Method of allocation to intervention (or comparison) (internal validity) | | | | | | | |
| Allocation to intervention (or comparison). How was confounding minimised | - | - | - | - | ++ | NA | NA |
| Were interventions (and comparisons) well described and appropriate? | ++ | ++ | ++ | + | ++ | ++ | + |
| Was the allocation concealed? | - | - | - | NR | ++ | NA | NA |
| Were participants or investigators blind to exposure and comparison? | - | - | - | NR | NR | + | NR |
| Was the exposure to the intervention and comparison adequate? | ++ | ++ | ++ | NR | ++ | ++ | NR |
| Was contamination acceptably low? | NR | ++ | ++ | NR | ++ | NA | NR |
| Were other interventions similar in both groups? | NR | NR | NR | NR | NR | NR | NA |
| Were all participants accounted for at study conclusion? | - | - | - | + | + | + | - |
| Did the setting reflect usual UK practice? | - | - | - | NA | + | NA | + |
| Did the intervention or control comparison reflect usual UK practice? | + | - | - | NA | + | NA | + |

| | Fernandez Ballesteros 2005 b | Fernandez Ballesteros 2012 | Fernandez Ballesteros 2013 | Fitzpatrick | Frieswijk | Fujiwara | Greaves |
|--|------------------------------|----------------------------|----------------------------|-------------|-----------|----------|---------|
| Section 3: Outcomes (internal validity) | | | | | | | |
| Were outcome measures reliable? | - | + | + | ++ | + | + | ++ |
| Were all outcome measurements complete? | - | - | - | + | + | ++ | + |
| Were all important outcomes assessed? | - | + | + | + | + | ++ | + |
| Were outcomes relevant? | + | ++ | ++ | ++ | ++ | ++ | ++ |
| Were there similar follow-up times in exposure and comparison groups? | ++ | ++ | ++ | - | ++ | ++ | NA |
| Was follow-up time meaningful? | ++ | ++ | ++ | - | ++ | ++ | + |
| Section 4: Analyses (internal validity) | | | | | | | |
| Were exposure and comparison groups similar at baseline? | - | ++ | ++ | NR | ++ | ++ | NA |
| Was intention to treat (ITT) analysis conducted? | - | - | - | NA | + | ++ | NA |
| Was the study sufficiently powered to detect an intervention effect (if one exists)? | - | - | - | - | NR | - | - |
| Were the estimates of effect size given or calculable? | ++ | ++ | ++ | - | ++ | ++ | - |
| Were the analytical methods appropriate? | + | ++ | ++ | - | ++ | - | - |
| Was the precision of intervention effect given or calculable: were they meaningful? | ++ | ++ | ++ | - | + | ++ | - |
| Section 5: Summary | | | | | | | |
| Are the study results internally valid (i.e. unbiased)? | - | - | - | - | ++ | + | - |
| Are the findings generalisable to the source population (i.e. externally valid)? | + | ++ | ++ | - | ++ | - | - |
| Overall quality assessment | - | + | + | - | ++ | + | - |

| Quality Check | Greenfield | Hanser | Haslam | Hernandez | Herrmann | Honigh-de Vlaming | Jimison |
|--|-------------------|---------------|---------------|------------------|-----------------|--------------------------|----------------|
| Section 1: Population External Validity | | | | | | | |
| Is the source population or source area well described? | - | NR | - | + | - | ++ | NR |
| Is the eligible population or area representative of the source population or area? | + | - | ++ | + | + | - | NR |
| Do the selected participants or areas represent the eligible population or area? | + | - | - | + | + | - | NR |
| Section 2: Method of allocation to intervention (or comparison) (internal validity) | | | | | | | |
| Allocation to intervention (or comparison). How was confounding minimised | ++ | NA | ++ | NR | + | NA | NA |
| Were interventions (and comparisons) well described and appropriate? | - | ++ | ++ | ++ | ++ | + | ++ |
| Was the allocation concealed? | NA | NA | NR | NR | NR | NR | NA |
| Were participants or investigators blind to exposure and comparison? | NA | NA | + | NR | NR | NR | NA |
| Was the exposure to the intervention and comparison adequate? | NA | NA | ++ | ++ | ++ | NR | NA |
| Was contamination acceptably low? | ++ | NA | ++ | NR | ++ | NR | NA |
| Were other interventions similar in both groups? | NA | NR | NR | NR | ++ | NR | NR |
| Were all participants accounted for at study conclusion? | ++ | + | NR | ++ | ++ | + | ++ |
| Did the setting reflect usual UK practice? | NA | NA | NA | - | NA | NA | - |
| Did the intervention or control comparison reflect usual UK practice? | NA | NA | NA | - | NA | NA | - |

| | Greenfield | Hanser | Haslam | Hernandez | Herrmann | Honigh-de Vlaming | Jimison |
|--|------------|--------|--------|-----------|----------|-------------------|---------|
| Section 3: Outcomes (internal validity) | | | | | | | |
| Were outcome measures reliable? | + | - | + | - | + | ++ | ++ |
| Were all outcome measurements complete? | + | NA | NR | + | + | + | ++ |
| Were all important outcomes assessed? | + | - | + | + | + | + | - |
| Were outcomes relevant? | + | + | ++ | + | + | ++ | + |
| Were there similar follow-up times in exposure and comparison groups? | NA | NA | ++ | + | + | + | NA |
| Was follow-up time meaningful? | NA | + | NR | NR | + | - | + |
| Section 4: Analyses (internal validity) | | | | | | | |
| Were exposure and comparison groups similar at baseline? | + | NA | + | NR | ++ | - | NA |
| Was intention to treat (ITT) analysis conducted? | NA | - | + | ++ | + | NA | + |
| Was the study sufficiently powered to detect an intervention effect (if one exists)? | + | - | NR | NA | NR | - | NA |
| Were the estimates of effect size given or calculable? | + | + | - | + | ++ | - | NR |
| Were the analytical methods appropriate? | + | + | + | - | + | - | + |
| Was the precision of intervention effect given or calculable: were they meaningful? | NR | + | - | - | ++ | - | NR |
| Section 5: Summary | | | | | | | |
| Are the study results internally valid (i.e. unbiased)? | - | - | - | - | + | + | - |
| Are the findings generalisable to the source population (i.e. externally valid)? | + | - | - | - | + | + | - |
| Overall quality assessment | + | - | - | - | + | + | - |

| Quality Check | Kalbaugh | Kamei | Kremers 2006/2007 | Lagana | Larsson | Lawlor |
|--|-----------------|--------------|--------------------------|---------------|----------------|---------------|
| Section 1: Population External Validity | | | | | | |
| Is the source population or source area well described? | - | - | + | - | - | ++ |
| Is the eligible population or area representative of the source population or area? | + | - | + | + | - | ++ |
| Do the selected participants or areas represent the eligible population or area? | + | - | - | + | + | ++ |
| Section 2: Method of allocation to intervention (or comparison) (internal validity) | | | | | | |
| Allocation to intervention (or comparison). How was confounding minimised | ++ | NA | ++ | + | NA | ++ |
| Were interventions (and comparisons) well described and appropriate? | ++ | ++ | ++ | ++ | ++ | ++ |
| Was the allocation concealed? | NR | NA | NR | NR | NA | ++ |
| Were participants or investigators blind to exposure and comparison? | NR | NA | NR | NR | NA | ++ |
| Was the exposure to the intervention and comparison adequate? | + | NA | ++ | ++ | NA | ++ |
| Was contamination acceptably low? | NR | NA | ++ | NR | NA | ++ |
| Were other interventions similar in both groups? | NR | NA | NR | NR | NA | ++ |
| Were all participants accounted for at study conclusion? | ++ | + | - | NR | ++ | ++ |
| Did the setting reflect usual UK practice? | - | NA | NR | - | + | + |
| Did the intervention or control comparison reflect usual UK practice? | - | NA | NA | - | + | + |

| | Kahlbaugh | Kamei | Kremers 2006/2007 | Lagana | Larsson | Lawlor |
|--|-----------|-------|----------------------|--------|---------|--------|
| Section 3: Outcomes (internal validity) | | | | | | |
| Were outcome measures reliable? | + | + | + | + | + | + |
| Were all outcome measurements complete? | + | + | + | + | + | - |
| Were all important outcomes assessed? | + | + | + | + | + | ++ |
| Were outcomes relevant? | + | + | ++ | ++ | + | ++ |
| Were there similar follow-up times in exposure and comparison groups? | ++ | NA | ++ | ++ | ++ | ++ |
| Was follow-up time meaningful? | ++ | + | ++ | - | + | ++ |
| Section 4: Analyses (internal validity) | | | | | | |
| Were exposure and comparison groups similar at baseline? | ++ | NA | ++ | + | NA | ++ |
| Was intention to treat (ITT) analysis conducted? | ++ | + | - | NR | NA | + |
| Was the study sufficiently powered to detect an intervention effect (if one exists)? | NR | NR | NR | ++ | - | ++ |
| Were the estimates of effect size given or calculable? | - | ++ | ++ | + | + | ++ |
| Were the analytical methods appropriate? | + | + | + | + | + | ++ |
| Was the precision of intervention effect given or calculable: were they meaningful? | - | ++ | + | - | - | ++ |
| Section 5: Summary | | | | | | |
| Are the study results internally valid (i.e. unbiased)? | - | - | + | + | - | ++ |
| Are the findings generalisable to the source population (i.e. externally valid)? | - | - | - | - | - | ++ |
| Overall quality assessment | - | - | + | + | - | ++ |

| Quality Check | Lee | Malekafzali | Martina 2006 | Martina 2012 | Marx | Mehta | Morita |
|--|-----|-------------|-----------------|-----------------|------|-------|--------|
| Section 1: Population External Validity | | | | | | | |
| Is the source population or source area well described? | - | ++ | + | + | NR | + | - |
| Is the eligible population or area representative of the source population or area? | ++ | + | + | + | + | - | + |
| Do the selected participants or areas represent the eligible population or area? | ++ | - | - | - | - | - | - |
| Section 2: Method of allocation to intervention (or comparison) (internal validity) | | | | | | | |
| Allocation to intervention (or comparison). How was confounding minimised | ++ | NA | - | - | - | NA | NA |
| Were interventions (and comparisons) well described and appropriate? | ++ | + | ++ | ++ | ++ | + | + |
| Was the allocation concealed? | ++ | NA | - | - | - | NA | NA |
| Were participants or investigators blind to exposure and comparison? | + | NA | - | - | - | NA | NA |
| Was the exposure to the intervention and comparison adequate? | ++ | NA | ++ | ++ | ++ | NA | + |
| Was contamination acceptably low? | NR | NA | ++ | ++ | - | NA | NA |
| Were other interventions similar in both groups? | NR | NA | NR | NR | NR | NA | NR |
| Were all participants accounted for at study conclusion? | ++ | - | ++ | ++ | - | ++ | ++ |
| Did the setting reflect usual UK practice? | NA | NA | NA | NA | NA | + | NA |
| Did the intervention or control comparison reflect usual UK practice? | NA | NA | NA | NA | + | + | NA |

| | Lee | Malekafzali | Martina 2006 | Martina 2012 | Marx | Mehta | Morita |
|--|-----|-------------|-----------------|-----------------|------|-------|--------|
| Section 3: Outcomes (internal validity) | | | | | | | |
| Were outcome measures reliable? | + | - | + | + | - | - | + |
| Were all outcome measurements complete? | + | NR | + | + | - | ++ | ++ |
| Were all important outcomes assessed? | + | - | + | + | - | - | + |
| Were outcomes relevant? | ++ | - | ++ | ++ | - | + | + |
| Were there similar follow-up times in exposure and comparison groups? | ++ | NA | ++ | ++ | + | NA | ++ |
| Was follow-up time meaningful? | - | + | ++ | ++ | + | + | + |
| Section 4: Analyses (internal validity) | | | | | | | |
| Were exposure and comparison groups similar at baseline? | ++ | NA | + | + | - | NA | NA |
| Was intention to treat (ITT) analysis conducted? | ++ | NA | ++ | ++ | - | ++ | ++ |
| Was the study sufficiently powered to detect an intervention effect (if one exists)? | + | - | NR | NR | - | - | - |
| Were the estimates of effect size given or calculable? | ++ | - | ++ | ++ | - | + | - |
| Were the analytical methods appropriate? | + | - | ++ | ++ | - | + | + |
| Was the precision of intervention effect given or calculable: were they meaningful? | ++ | - | ++ | ++ | - | - | - |
| Section 5: Summary | | | | | | | |
| Are the study results internally valid (i.e. unbiased)? | ++ | - | + | + | - | - | - |
| Are the findings generalisable to the source population (i.e. externally valid)? | + | + | - | - | - | - | - |
| Overall quality assessment | ++ | - | + | + | - | - | - |

Quality Check**Section 1: Population External Validity**

| | Mountain | Mui | Newall | O'Shea | Orte | Pope |
|---|----------|-----|--------|--------|------|------|
| Is the source population or source area well described? | ++ | + | ++ | ++ | ++ | - |
| Is the eligible population or area representative of the source population or area? | + | ++ | + | ++ | ++ | + |
| Do the selected participants or areas represent the eligible population or area? | + | ++ | - | + | + | + |

Section 2: Method of allocation to intervention (or comparison) (internal validity)

| | | | | | | |
|---|----|----|----|----|----|----|
| Allocation to intervention (or comparison). How was confounding minimised | ++ | NA | NA | NA | NA | NA |
| Were interventions (and comparisons) well described and appropriate? | ++ | ++ | ++ | + | ++ | ++ |
| Was the allocation concealed? | ++ | NA | NA | NA | NA | NA |
| Were participants or investigators blind to exposure and comparison? | + | NA | NA | NA | NA | NA |
| Was the exposure to the intervention and comparison adequate? | ++ | NA | NA | NA | NA | NA |
| Was contamination acceptably low? | NR | NA | NA | NA | NA | NA |
| Were other interventions similar in both groups? | NR | NR | NA | NA | NA | NA |
| Were all participants accounted for at study conclusion? | ++ | + | ++ | NA | - | ++ |
| Did the setting reflect usual UK practice? | + | NA | NA | + | - | NA |
| Did the intervention or control comparison reflect usual UK practice? | ++ | NA | NA | + | - | NA |

| | Mountain | Mui | Newall | O'Shea | Orte | Pope |
|--|----------|-----|--------|--------|------|------|
| Section 3: Outcomes (internal validity) | | | | | | |
| Were outcome measures reliable? | + | - | - | - | - | + |
| Were all outcome measurements complete? | - | ++ | - | NR | NR | - |
| Were all important outcomes assessed? | + | - | - | NA | NR | + |
| Were outcomes relevant? | + | - | + | + | + | + |
| Were there similar follow-up times in exposure and comparison groups? | ++ | NA | NA | NA | NA | NA |
| Was follow-up time meaningful? | + | + | NA | + | ++ | ++ |
| Section 4: Analyses (internal validity) | | | | | | |
| Were exposure and comparison groups similar at baseline? | ++ | NA | NA | NA | NA | NA |
| Was intention to treat (ITT) analysis conducted? | ++ | ++ | NA | NA | - | - |
| Was the study sufficiently powered to detect an intervention effect (if one exists)? | - | - | NA | NA | NA | NA |
| Were the estimates of effect size given or calculable? | + | - | NA | NA | NR | ++ |
| Were the analytical methods appropriate? | + | - | - | + | NR | + |
| Was the precision of intervention effect given or calculable: were they meaningful? | - | - | NA | - | - | ++ |
| Section 5: Summary | | | | | | |
| Are the study results internally valid (i.e. unbiased)? | + | .- | - | - | - | - |
| Are the findings generalisable to the source population (i.e. externally valid)? | ++ | ++ | + | ++ | + | + |
| Overall quality assessment | ++ | - | - | - | - | - |

| Quality Check | Portero | Power | Rosenbaum | Saito | Savundranayagam | Scott |
|--|----------------|--------------|------------------|--------------|------------------------|--------------|
| Section 1: Population External Validity | | | | | | |
| Is the source population or source area well described? | ++ | ++ | NR | + | - | - |
| Is the eligible population or area representative of the source population or area? | ++ | + | NR | + | + | + |
| Do the selected participants or areas represent the eligible population or area? | ++ | - | NR | + | NR | + |
| Section 2: Method of allocation to intervention (or comparison) (internal validity) | | | | | | |
| Allocation to intervention (or comparison). How was confounding minimised | NA | NA | NA | ++ | NA | NA |
| Were interventions (and comparisons) well described and appropriate? | ++ | ++ | NA | + | ++ | ++ |
| Was the allocation concealed? | NA | NA | NA | ++ | NA | NA |
| Were participants or investigators blind to exposure and comparison? | NA | NA | NA | - | NR | NA |
| Was the exposure to the intervention and comparison adequate? | ++ | NA | NA | + | + | ++ |
| Was contamination acceptably low? | NA | NA | NA | ++ | NA | NR |
| Were other interventions similar in both groups? | NA | NA | NA | NR | NR | NR |
| Were all participants accounted for at study conclusion? | + | ++ | NA | ++ | - | ++ |
| Did the setting reflect usual UK practice? | - | - | + | NA | NA | NA |
| Did the intervention or control comparison reflect usual UK practice? | - | - | + | NA | NA | NA |

| | Portero | Power | Rosenbaum | Saito | Savundranayagam | Scott |
|--|---------|-------|-----------|-------|-----------------|-------|
| Section 3: Outcomes (internal validity) | | | | | | |
| Were outcome measures reliable? | + | - | - | + | + | + |
| Were all outcome measurements complete? | + | NA | ++ | NR | - | + |
| Were all important outcomes assessed? | + | NA | - | NR | - | + |
| Were outcomes relevant? | + | + | + | ++ | - | + |
| Were there similar follow-up times in exposure and comparison groups? | NA | NA | NA | ++ | + | + |
| Was follow-up time meaningful? | ++ | NA | - | + | + | |
| Section 4: Analyses (internal validity) | | | | | | |
| Were exposure and comparison groups similar at baseline? | NA | NA | NA | + | + | + |
| Was intention to treat (ITT) analysis conducted? | ++ | NA | ++ | ++ | - | ++ |
| Was the study sufficiently powered to detect an intervention effect (if one exists)? | NR | NA | - | - | - | - |
| Were the estimates of effect size given or calculable? | ++ | NA | - | + | - | - |
| Were the analytical methods appropriate? | + | + | - | + | + | - |
| Was the precision of intervention effect given or calculable: were they meaningful? | ++ | NA | - | + | - | - |
| Section 5: Summary | | | | | | |
| Are the study results internally valid (i.e. unbiased)? | + | - | - | + | - | - |
| Are the findings generalisable to the source population (i.e. externally valid)? | + | - | - | + | - | - |
| | + | | | | | |

| Quality Check | Seinfeld | Shapira | Slegers 2007, 2008, 2012 | Sole | Stevens | Studenski |
|--|-----------------|----------------|---|-------------|----------------|------------------|
| Section 1: Population External Validity | | | | | | |
| Is the source population or source area well described? | - | - | + | - | + | - |
| Is the eligible population or area representative of the source population or area? | + | - | + | NR | + | - |
| Do the selected participants or areas represent the eligible population or area? | NR | - | + | + | - | - |
| Section 2: Method of allocation to intervention (or comparison) (internal validity) | | | | | | |
| Allocation to intervention (or comparison). How was confounding minimised | - | NR | + | NA | - | NA |
| Were interventions (and comparisons) well described and appropriate? | ++ | ++ | ++ | + | ++ | ++ |
| Was the allocation concealed? | - | NR | NR | NA | - | NA |
| Were participants or investigators blind to exposure and comparison? | - | + | NR | NA | - | NA |
| Was the exposure to the intervention and comparison adequate? | ++ | ++ | ++ | ++ | ++ | NA |
| Was contamination acceptably low? | ++ | ++ | ++ | NA | ++ | NA |
| Were other interventions similar in both groups? | NR | NR | NR | NR | NR | NA |
| Were all participants accounted for at study conclusion? | - | - | + | - | ++ | - |
| Did the setting reflect usual UK practice? | NA | NA | NA | NA | NA | - |
| Did the intervention or control comparison reflect usual UK practice? | NA | NA | + | NA | NA | - |

| | Seinfeld | Shapira | Slegers 2007, 2008, 2012 | Sole | Stevens | Studenski |
|--|----------|---------|-----------------------------------|------|---------|-----------|
| Section 3: Outcomes (internal validity) | | | | | | |
| Were outcome measures reliable? | + | + | + | + | + | + |
| Were all outcome measurements complete? | - | - | + | - | + | - |
| Were all important outcomes assessed? | + | + | + | - | + | + |
| Were outcomes relevant? | ++ | ++ | ++ | + | ++ | + |
| Were there similar follow-up times in exposure and comparison groups? | ++ | ++ | ++ | ++ | ++ | NA |
| Was follow-up time meaningful? | ++ | ++ | ++ | ++ | ++ | + |
| Section 4: Analyses (internal validity) | | | | | | |
| Were exposure and comparison groups similar at baseline? | + | - | + | - | + | NA |
| Was intention to treat (ITT) analysis conducted? | - | - | + | NR | ++ | - |
| Was the study sufficiently powered to detect an intervention effect (if one exists)? | - | NR | ++ | - | NR | NA |
| Were the estimates of effect size given or calculable? | ++ | + | ++ | + | + | + |
| Were the analytical methods appropriate? | + | - | + | - | + | + |
| Was the precision of intervention effect given or calculable: were they meaningful? | - | + | ++ | + | + | + |
| Section 5: Summary | | | | | | |
| Are the study results internally valid (i.e. unbiased)? | + | - | ++ | - | + | - |
| Are the findings generalisable to the source population (i.e. externally valid)? | - | - | + | - | - | - |
| Overall quality assessment | | + | ++ | - | + | - |

| Quality Check | Torp 2008 | Torp 2013 | Travers | White | Won | Woodward 2011/13 |
|--|----------------------|----------------------|----------------|--------------|------------|-----------------------------|
| Section 1: Population External Validity | | | | | | |
| Is the source population or source area well described? | + | + | - | - | - | - |
| Is the eligible population or area representative of the source population or area? | + | + | + | + | + | + |
| Do the selected participants or areas represent the eligible population or area? | - | + | - | + | + | - |
| Section 2: Method of allocation to intervention (or comparison) (internal validity) | | | | | | |
| Allocation to intervention (or comparison). How was confounding minimised | NA | NA | NA | ++ | NA | + |
| Were interventions (and comparisons) well described and appropriate? | ++ | ++ | + | ++ | ++ | ++ |
| Was the allocation concealed? | NA | NA | NA | NR | NA | NR |
| Were participants or investigators blind to exposure and comparison? | NA | NA | NA | NR | NA | NR |
| Was the exposure to the intervention and comparison adequate? | ++ | + | ++ | ++ | ++ | ++ |
| Was contamination acceptably low? | NA | NA | NA | ++ | NA | NR |
| Were other interventions similar in both groups? | NA | NR | NA | NR | NA | NR |
| Were all participants accounted for at study conclusion? | ++ | ++ | - | + | - | - |
| Did the setting reflect usual UK practice? | + | - | NA | NA | NA | NA |
| Did the intervention or control comparison reflect usual UK practice? | + | - | NA | NA | NA | NA |

| | Torp 2008 | Torp 2013 | Travers | White | Won | Woodward 2011/13 |
|--|----------------------|----------------------|----------------|--------------|------------|-----------------------------|
| Section 3: Outcomes (internal validity) | | | | | | |
| Were outcome measures reliable? | + | - | - | + | + | + |
| Were all outcome measurements complete? | + | NA | - | + | - | NR |
| Were all important outcomes assessed? | + | - | + | ++ | + | ++ |
| Were outcomes relevant? | + | + | + | + | + | + |
| Were there similar follow-up times in exposure and comparison groups? | NA | NA | NA | ++ | NA | ++ |
| Was follow-up time meaningful? | + | + | + | ++ | + | ++ |
| Section 4: Analyses (internal validity) | | | | | | |
| Were exposure and comparison groups similar at baseline? | NA | NA | NA | + | NA | + |
| Was intention to treat (ITT) analysis conducted? | ++ | NA | - | ++ | - | NR |
| Was the study sufficiently powered to detect an intervention effect (if one exists)? | - | NA | - | NR | - | NR |
| Were the estimates of effect size given or calculable? | ++ | - | - | ++ | ++ | - |
| Were the analytical methods appropriate? | + | - | + | + | + | + |
| Was the precision of intervention effect given or calculable: were they meaningful? | + | - | - | + | ++ | - |
| Section 5: Summary | | | | | | |
| Are the study results internally valid (i.e. unbiased)? | - | .- | - | + | - | - |
| Are the findings generalisable to the source population (i.e. externally valid)? | - | + | | - | + | - |
| Overall quality assessment | + | - | - | + | - | - |

Appendix 4: Search Strategies

Searches were run in March 2014 with the exception of DARE databases which were searched in July 2014.

Review 1 Syntax search strategy Medline

1. Aged/
2. Retirement/
3. Elder*.ti,ab
4. Frail*.ti,ab
5. Geriatric*.ti,ab
6. Gerontology.ti,ab
7. Seniors.ti,ab
8. Retire*.ti,ab
9. Pensioner\$.ti,ab
10. (Later-life or later life) .ti,ab
11. (Late-life or late life) .ti,ab
12. Old age.ti,ab
13. "Old people" .ti,ab
14. "Older people".ti, ab
15. Old person.ti,ab
16. Older person.ti,ab
17. (Older man) .ti,ab
18. (Older men).ti,ab

19. (Older woman or Older women) .ti,ab
20. Older male\$.ti,ab
21. Older female\$.ti,ab
22. (Old old or old-old) OR (Oldest old or Oldest-old).ti,ab
23. Very old.ti
24. (Senior Citizen OR Senior Citizens).ti,ab
25. Older adult*.ti,ab
26. 1 OR 2
27. 3-25/OR
28. 26 OR 27
29. Psychological Resilience/
30. Psychological Adaptation/
31. Social Support/
32. Community Networks/
33. Independent Living/
34. Quality of Life/
35. Social Identification/
36. Happiness/
37. Mental Health/
38. Personal Satisfaction/
39. Social Distance/
40. 29-39/OR
41. Mental health.ti
42. Quality of life.ti
43. Emotional health.ti
44. Emotional capital.ti
45. Mental capital.ti
46. Wellness.ti

47. Wellbeing or Well-being or Well being.ti
48. Sense of coherence.ti
49. (Activities of daily living or ADL\$) .ti
50. Independent living.ti
51. (healthy ageing or healthy aging) .ti
52. (active aging or active ageing) .ti
53. happiness .ti,
54. meaningfulness.ti
55. resilien*.ti
56. loneliness.ti
57. mastery.ti
58. locus of control.ti
59. capabilit*.ti
60. empower* .ti
61. social capital.ti
62. participation.ti
63. social support.ti
64. social contact.ti
65. civic engagement.ti
66. civic involvement.ti
67. community engagement.ti
68. sense of belonging.ti
69. psychosocial.ti
70. social inclusion.ti
71. social exclusion.ti
72. independence.ti
73. dignity.ti
74. choice.ti

75. isolation.ti
76. adl\$.ti
77. social n1 relation*.ti
78. family n1 relation* .ti
79. social n1 activit*.ti
80. civic n1 activit* .ti
81. 41-80/OR
82. 40 OR 81
83. 27 AND 82
84. Elder*.ti
85. Frail*.ti
86. Geriatric*.ti
87. Gerontology.ti
88. Seniors.ti
89. Retire*.ti
90. Pensioner\$.ti
91. (Later-life or later life) .ti
92. (Late-life or late life) .ti
93. Old age.ti
94. Old people.ti
95. Older people.ti
96. Old person.ti
97. Older person.ti
98. Older man.ti
99. Older men.ti
100. (Older woman or Older women) .ti
101. Older male.ti
102. Older female.ti

103. (Old old OR Oldest old).ti
104. Very old.ti
105. (Senior Citizen OR senior citizens).ti
106. (Older adult OR Older adults).ti
107. 84-106/OR
108. Mental health.ti,ab
109. Quality of life.ti,ab
110. Emotional health.ti,ab
111. Emotional capital.ti,ab
112. Mental capital.ti,ab
113. Wellness.ti,ab
114. Wellbeing or Well-being or Well being.ti,ab
115. Sense of coherence.ti,ab
116. (Activities of daily living or ADL\$) .ti,ab
117. Independent living.ti,ab
118. (healthy ageing or healthy aging) .ti,ab
119. (active aging or active ageing) .ti,ab
120. happiness .ti,ab
121. meaningfulness.ti,ab
122. resilien*.ti,ab
123. loneliness.ti,ab
124. mastery.ti,ab
125. locus of control.ti,ab
126. capabilit*.ti,ab
127. empower* .ti,ab
128. social capital.ti,ab
129. social relation*.ti,ab
130. family relation* .ti,ab

131. participation.ti
132. social support.ti,ab
133. social contact.ti,ab
134. social activit*.ti,ab
135. civic activit* .ti,ab
136. civic engagement.ti,ab
137. civic involvement.ti,ab
138. community engagement.ti,ab
139. sense of belonging .ti,ab
140. psychosocial.ti,ab
141. social inclusion.ti,ab
142. social exclusion.ti,ab
143. independence.ti,ab
144. dignity. ti,ab
145. choice.ti
146. isolation.ti
147. 105-143/OR
148. 104 AND (144 OR 78)
149. intervention*.ti,ab
150. initiative*.ti,ab
151. program\$.ti,ab OR programme\$.ti,ab
152. (Promote\$ OR Promoting OR Promotion).ti,ab
153. access* .ti
154. Social Media/
155. Communication/
156. Health Promotion/
157. Family/
158. Friends/

159. 146-155/OR
160. (145 AND 156) OR (81 AND 156)
161. Residential Facilities/
162. Nursing Homes. Txt
163. Residential care.txt
164. Long Term Care/
165. Palliative Care/
166. 158-162/OR
167. 157 NOT 163
168. editorials, comments, case reports, letters
169. 164 NOT 165
170. Limit 166 (English language, abstract, year = "2003-2014")

Review 1 Syntax search strategy Psychinfo

1. (ZG "aged (65 yrs & older)") ((Index) term
2. DE Retirement (Major Concept)
3. Elder*.ti,ab
4. Frail*.ti,ab
5. Geriatric*.ti,ab
6. Gerontology.ti,ab
7. Seniors.ti,ab
8. Retire*.ti,ab
9. Pensioner\$.ti,ab
10. (Later-life or later life) .ti,ab
11. (Late-life or late life) .ti,ab
12. Old age.ti,ab
13. "Old people" .ti,ab
14. "Older people".ti, ab

15. Old person.ti,ab
16. Older person.ti,ab
17. (Older man) .ti,ab
18. (Older men).ti,ab
19. (Older woman or Older women) .ti,ab
20. Older male\$.ti,ab
21. Older female\$.ti,ab
22. (Old old or old-old) OR (Oldest old or Oldest-old).ti,ab
23. Very old.ti
24. (Senior Citizen OR Senior Citizens).ti,ab
25. Older adult*.ti,ab
26. 1 OR 2
27. 3-25/OR
28. 26 OR 27
29. DE "Resilience (Psychological)" (Major Concept)
30. DE "Emotional Adjustment" OR DE "Emotional Control" OR DE "Identity Crisis" (Emotional Adjustment Major Concept Exploded)
31. Social Support (Major Concept)
32. DE "Social Networks" OR DE "Online Social Networks"
33. DE "Self Care Skills"
34. DE "Quality of Life"
35. DE "Social Identity"
36. DE Happiness
37. DE "Mental Health" OR "Community Mental Health"
38. DE "Satisfaction" (Not exploded)
39. DE "Social Isolation"
40. 29-39/OR
41. Mental health.ti

42. Quality of life.ti
43. Emotional health.ti
44. Emotional capital.ti
45. Mental capital.ti
46. Wellness.ti
47. Wellbeing or Well-being or Well being.ti
48. Sense of coherence.ti
49. (Activities of daily living or ADL\$) .ti
50. Independent living.ti
51. (healthy ageing or healthy aging) .ti
52. (active aging or active ageing) .ti
53. happiness .ti,
54. meaningfulness.ti
55. resilien*.ti
56. loneliness.ti
57. mastery.ti
58. locus of control.ti
59. capabilit*.ti
60. empower* .ti
61. social capital.ti
62. participation.ti
63. social support.ti
64. social contact.ti
65. civic engagement.ti
66. civic involvement.ti
67. community engagement.ti
68. sense of belonging.ti
69. psychosocial.ti

70. social inclusion.ti
71. social exclusion.ti
72. independence.ti
73. dignity.ti
74. choice.ti
75. isolation.ti
76. adl\$.ti
77. social n1 relation*.ti
78. family n1 relation* .ti
79. social n1 activit*.ti
80. civic n1 activit* .ti
81. 41-80/OR
82. 40 OR 81
83. 27 AND 82
84. Elder*.ti
85. Frail*.ti
86. Geriatric*.ti
87. Gerontology.ti
88. Seniors.ti
89. Retire*.ti
90. Pensioner\$.ti
91. (Later-life or later life) .ti
92. (Late-life or late life) .ti
93. Old age.ti
94. Old people.ti
95. Older people.ti
96. Old person.ti
97. Older person.ti

98. Older man.ti
99. Older men.ti
100. (Older woman or Older women) .ti
101. Older male.ti
102. Older female.ti
103. (Old old OR Oldest old).ti
104. Very old.ti
105. (Senior Citizen OR senior citizens).ti
106. (Older adult OR Older adults).ti
107. 84-106/OR
108. Mental health.ti,ab
109. Quality of life.ti,ab
110. Emotional health.ti,ab
111. Emotional capital.ti,ab
112. Mental capital.ti,ab
113. Wellness.ti,ab
114. Wellbeing or Well-being or Well being.ti,ab
115. Sense of coherence.ti,ab
116. (Activities of daily living or ADL\$) .ti,ab
117. Independent living.ti,ab
118. (healthy ageing or healthy aging) .ti,ab
119. (active aging or active ageing) .ti,ab
120. happiness .ti,ab
121. meaningfulness.ti,ab
122. resilien*.ti,ab
123. loneliness.ti,ab
124. mastery.ti,ab
125. locus of control.ti,ab

126. capabilit*.ti,ab
127. empower* .ti,ab
128. social capital.ti,ab
129. social relation*.ti,ab
130. family relation* .ti,ab
131. participation.ti
132. social support.ti,ab
133. social contact.ti,ab
134. social activit*.ti,ab
135. civic activit* .ti,ab
136. civic engagement.ti,ab
137. civic involvement.ti,ab
138. community engagement.ti,ab
139. sense of belonging .ti,ab
140. psychosocial.ti,ab
141. social inclusion.ti,ab
142. social exclusion.ti,ab
143. independence.ti,ab
144. dignity. ti,ab
145. choice.ti
146. isolation.ti
147. 105-143/OR
148. 104 AND (144 OR 78)
149. intervention*.ti,ab
150. initiative*.ti,ab
151. program\$.ti,ab OR programme\$.ti,ab
152. (Promote\$ OR Promoting OR Promotion).ti,ab
153. access* .ti

154. Social Media/
155. Communication/
156. Health Promotion/
157. Family/
158. Friends/
159. 146-155/OR
160. (145 AND 156) OR (81 AND 156)
161. Residential Facilities/
162. Nursing Homes. Txt
163. Residential care.txt
164. Long Term Care/
165. Palliative Care/
166. 158-162/OR
167. 157 NOT 163
168. editorials, comments, case reports, letters
169. 164 NOT 165
170. Limit 166 (English language, year = "2003-2014")

Similar strategies were run for Ageline, ASSIA and ERIC.

Review 1 Syntax search strategy DARE

Searches of the Database of Abstracts of Reviews of Effectiveness at the University of York were run looking for key terms wellbeing, independence AND older people, or loneliness in any field. This also included searches of the NHS Economic Evaluation Database for these terms.

Review 1 Syntax search strategy Social Care Online

1. Older people [Subject Term]
2. Ageing [Subject Term]
3. Age Discrimination [Subject Term]
4. 1 OR 2 OR 3
5. Wellbeing [Subject Term]
6. Psychosocial Intervention [Subject Term]
7. Psychology [Subject Term]
8. Psychosocial approach [Subject Term]
9. Resilience [Subject Term]
10. Social Networks [Subject Term]
11. Independent Living [Subject Term]
12. Independence [Subject Term]
13. Quality of Life [Subject Term]
14. Happiness [Subject Term]
15. Mental Health [Subject Term]
16. Emotions [Subject Term]
17. Social Capital
18. Activities of Daily Living
19. Loneliness
20. Empowerment

21. Participation
22. Social Inclusion
23. Social Exclusion
24. Dignity
25. Choice
26. Isolated People
27. 5-26/OR
28. Internet
29. Computers
30. Befriending schemes
31. Social Media
32. Communication
33. Intervention
34. Intergenerational Relationships
35. 28-34/OR
36. 4 AND 27
37. 4 AND 36
38. 36 OR 37
39. Limit 38 2003-2014

Note: The Social Care Online strategy had to be run separately one year at a time due to the limit of 500 records that can be retrieved from this database.

Review 1 Syntax search strategy Google Scholar and Google

Limited search for terms “mental wellbeing” OR “loneliness” OR “isolation” AND “older people” AND “evaluation”. First 20 pages of search results only examined for Google and Google Scholar

Appendix 5: Excluded studies

Note: This appendix covers studies excluded at full text stage only. Some papers are listed under more than one exclusion criteria category in this Appendix.

Health and social care delivered interventions

1. Aday RH, Kehoe GC, Farney LA. Impact of senior center friendships on aging women who live alone. *Journal Of Women & Aging*. 2006;18(1):57-73.
2. Allemand M, Steiner M, Hill PL. Effects of a forgiveness intervention for older adults. *Journal Of Counseling Psychology*. 2013;60(2):279-86.
3. Bass-Haugen J, Flinn N, Giles-Heinz A, Matuska K, Neighbor M. Outcomes of a pilot occupational therapy wellness program for older adults. *American Journal of Occupational Therapy*. 2003;57(2):220-4.
4. Behm L, Ivanoff SD, Zidén L. Preventive home visits and health--experiences among very old people. *BMC Public Health*. 2013;13:378-.

5. Behm L, Wilhelmson K, Falk K, Eklund K, Zidane L, Dahlin-Ivanoff S. Positive health outcomes following health-promoting and disease-preventive interventions for independent very old persons: Long-term results of the three-armed RCT Elderly Persons in the Risk Zone. *Archives of Gerontology and Geriatrics*. 2014;58(3):376-83.
6. Bleijenberg N, ten Dam VH, Drubbel I, Numans ME, de Wit NJ, Schuurmans MJ. Development of a Proactive Care Program (U-CARE) to Preserve Physical Functioning of Frail Older People in Primary Care. *Journal of Nursing Scholarship*. 2013;45(3):230-7.
7. Boen H, Dalgard OS, Johansen R, Nord E. A randomized controlled trial of a senior centre group programme for increasing social support and preventing depression in elderly people living at home in Norway. *BMC Geriatrics*. 2012;12(Journal Article):20-.
8. Burgio LD, Collins IB, Schmid B, Wharton T, McCallum D, DeCoster J. Translating the REACH Caregiver Intervention for Use by Area Agency on Aging Personnel: the REACH OUT Program. *Gerontologist*. 2009;49(1):103-16.
9. Cameron ID, Fairhall N, Langron C, Lockwood K, Monaghan N, Aggar C, et al. A multifactorial interdisciplinary intervention reduces frailty in older people: randomized trial. *BMC Medicine*. 2013;11(Journal Article):65-.
10. Carretero S, Garcés J, Ródenas F. Evaluation of the home help service and its impact on the informal caregiver's burden of dependent elders. *International Journal Of Geriatric Psychiatry*. 2007;22(8):738-49.
11. Chang AK, Park Y-H, Fritschi C, Kim MJ. A Family Involvement and Patient-Tailored Health Management Program in Elderly Korean Stroke Patients' Day Care Centers. *Rehabilitation Nursing: The Official Journal Of The Association Of Rehabilitation Nurses*. 2013.
12. Cheung C-K, Kwan AY-H. Inducing older adults into volunteer work to sustain their psychological well-being. *Ageing International*. 2006;31(1):44-58.
13. Cheung KS, Lau BH, Wong PW, Leung AY, Lou VW, Chan GM, et al. Multicomponent intervention on enhancing dementia caregiver well-being and reducing behavioural problems among Hong Kong Chinese: a translational study based on REACH II. *Int J Geriatr Psychiatry*. 2014. Epub 2014/07/22.

14. Chiang K-J, Lu R-B, Chu H, Chang Y-C, Chou K-R. Evaluation of the effect of a life review group program on self-esteem and life satisfaction in the elderly. *International journal of geriatric psychiatry*. 2008;23(1):7-10.
15. Chippendale T. Life Review through Writing Workshops: Lessons Learned from Successful Implementation in a Senior Residence Setting. *Physical and Occupational Therapy in Geriatrics*. 2011;29(4):311-9.
16. Chippendale T, Bear-Lehman J. Effect of life review writing on depressive symptoms in older adults: a randomized controlled trial. *The American Journal Of Occupational Therapy: Official Publication Of The American Occupational Therapy Association*. 2012;66(4):438-46.
17. Chiu M, Wesson V, Sadavoy J. Improving caregiving competence, stress coping, and mental well-being in informal dementia carers. *World Journal Of Psychiatry*. 2013;3(3):65-73.
18. Clark F, Jackson J, Carlson M, Chou C-P, Cherry BJ, Jordan-Marsh M, et al. Effectiveness of a lifestyle intervention in promoting the well-being of independently living older people: results of the Well Elderly 2 Randomised Controlled Trial. *Journal of epidemiology and community health*. 2012;66(9):782-90.
19. Clark S, Jackson L. The Wellbeing Project: improving the psychological wellbeing of older adults. *Working with Older People*. 2011;15(2):87-91.
20. Creswell JD, Irwin MR, Burklund LJ, Lieberman MD, Arevalo JMG, Ma J, et al. Mindfulness-Based Stress Reduction training reduces loneliness and pro-inflammatory gene expression in older adults: a small randomized controlled trial. *Brain, behavior, and immunity*. 2012;26(7):1095-101.
21. Crone DM, O'Connell EE, Tyson PJ, Clark-Stone F, Opher S, James DVB. 'Art Lift' intervention to improve mental well-being: an observational study from U.K. general practice. *International Journal Of Mental Health Nursing*. 2013;22(3):279-86.
22. Davis JD, Tremont G, Bishop DS, Fortinsky RH, Locher JL, Bales CW, et al. A telephone-delivered psychosocial intervention improves dementia caregiver adjustment following nursing home placement. *International journal of geriatric psychiatry*. 2011;26; 30(4; 4):380; 4-7; 402.

23. Drossel C, Fisher JE, Mercer V. A DBT Skills Training Group for Family Caregivers of Persons With Dementia. *Behavior Therapy*. 2011;42(1):109-19.
24. Fairchild JK, Scogin FR. Training to Enhance Adult Memory (TEAM): an investigation of the effectiveness of a memory training program with older adults. *Aging & Mental Health*. 2010;14(3):364-73.
25. Finkelstein SM, Speedie SM, Zhou X, Potthoff S, Ratner ER. Perception, satisfaction and utilization of the VALUE home telehealth service. *Journal of telemedicine and telecare*. 2011;17(6):288-92.
26. Gitlin LN, Winter L, Corcoran M, Dennis MP, Schinfield S, Hauck WW. Effects of the Home Environmental Skill-Building Program on the Caregiver-Care Recipient Dyad: 6-Month Outcomes from the Philadelphia REACH Initiative. *Gerontologist*. 2003;43(4):532-46.
27. Gustafsson S, Eklund K, Wilhelmson K, Edberg A-K, Johansson B, Kronlof GH, et al. Long-term outcome for ADL following the health-promoting RCT--elderly persons in the risk zone. *The Gerontologist*. 2013;53(4):654-63.
28. Gustafsson S, Wilhelmson K, Eklund K, Gosman-Hedstrom G, Zidan L, Kronlof GH, et al. Health-promoting interventions for persons aged 80 and older are successful in the short term--results from the randomized and three-armed Elderly Persons in the Risk Zone study. *Journal of the American Geriatrics Society*. 2012;60(3):447-54.
29. Haberstroh J, Neumeyer K, Krause K, Franzmann J, Pantel J. TANDEM: Communication training for informal caregivers of people with dementia. *Aging & Mental Health*. 2011;15(3):405-13.
30. Hanaoka H, Okamura H. Study on effects of life review activities on the quality of life of the elderly: a randomized controlled trial. *Psychotherapy and psychosomatics*. 2004;73(5):302-11.
31. Hastings EC, West RL. The Relative Success of a Self-Help and a Group-Based Memory Training Program for Older Adults. *Psychology and Aging Psychology and Aging*. 2009;24(3):586-94.
32. Heathcote J, Hong CS. Groupwork as a tool to combat loneliness among older people: Initial observations. *Groupwork*. 2009;19(2):121-30.

33. Hekmatpou D, Shamsi M, Zamani M. The effect of a healthy lifestyle program on the elderly's health in Arak. *Indian journal of medical sciences*. 2013;67(3-4):70-7.
34. Ichida Y, Hirai H, Kondo K, Kawachi I, Takeda T, Endo H. Does social participation improve self-rated health in the older population? A quasi-experimental intervention study. *Social science & medicine (1982)*. 2013;94(Journal Article):83-90.
35. Iliffe S, Kharicha K, Goodman C, Swift C, Harari D, Manthorpe J. Smarter Working in Social and Health Care (SWISH): Enhancing the quality of life of older people using an 'expert system'. *Quality in Ageing - Policy, practice and research*. 2005;6(4):4-11.
36. Ingersoll-Dayton B, Campbell R, Ha J-H. Enhancing forgiveness: a group intervention for the elderly. *Journal Of Gerontological Social Work*. 2009;52(1):2-16.
37. Judge KS, Yarry SJ, Looman WJ, Bass DM. Improved Strain and Psychosocial Outcomes for Caregivers of Individuals with Dementia: Findings from Project ANSWERS. *Gerontologist*. 2013;53(2):280-92.
38. Kamegaya T, Araki Y, Kigure H, Yamaguchi H. Twelve-week physical and leisure activity programme improved cognitive function in community-dwelling elderly subjects: a randomized controlled trial. *Psychogeriatrics: The Official Journal Of The Japanese Psychogeriatric Society*. 2014;14(1):47-54.
39. Kamegaya T, Maki Y, Yamagami T, Yamaguchi T, Murai T, Yamaguchi H. Pleasant physical exercise program for prevention of cognitive decline in community-dwelling elderly with subjective memory complaints. *Geriatrics & Gerontology International*. 2012;12(4):673-9.
40. Kharicha K, Iliffe S, Harari D, Swift CG, Goodman C, Manthorpe J, et al. Feasibility of repeated use of the Health Risk Appraisal for Older people system as a health promotion tool in community-dwelling older people: retrospective cohort study 2001-05. *Age and Ageing*. 2012;41(1):128-31.
41. Kidd LI, Zauszniewski JA, Morris DL. Benefits of a Poetry Writing Intervention for Family Caregivers of Elders with Dementia. *Issues in Mental Health Nursing*. 2011;32(9):598-604.

42. Kim SK. A randomized, controlled study of the effects of art therapy on older Korean-Americans' healthy aging. *The Arts in Psychotherapy*. 2013;40(Journal Article):158-64.
43. Kuczmarksi MF, Cotugna N. Outcome evaluation of a 3-year senior health and wellness initiative. *Journal of community health*. 2009;34(1):33-9.
44. Kwok T, Wong A, Chan G, Shiu YY, Lam K-C, Young D, et al. Effectiveness of cognitive training for Chinese elderly in Hong Kong. *Clinical Interventions In Aging*. 2013;8:213-9.
45. Li H, Melnyk BM, McCann R, Chatcheydang J, Koulouglioti C, Nichols LW, et al. Creating avenues for relative empowerment (CARE): a pilot test of an intervention to improve outcomes of hospitalized elders and family caregivers. *Research In Nursing & Health*. 2003;26(4):284-99.
46. Li IC. The effectiveness of a health promotion program for the low-income elderly in Taipei, Taiwan. *Journal of community health*. 2004;29(6):511-25.
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