A review of the effectiveness and cost-effectiveness of personal, social and health education in primary schools focusing on sex and relationships and alcohol education for young people aged 5 to 11 years

FINAL REPORT

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Glossary

American school grades	Education is divided into 3 levels: elementary school, junior high (or middle) school and high school (see Appendix 7)
Bias	Deviation of results or inferences from the truth, or processes leading to such deviation. Any trend in the collection, analysis, interpretation, publication or review of data that can lead to conclusions that are systematically different from the truth.
Binge drinking	Consuming large quantities of alcohol over a short period of time. Often associated with drinking to become intoxicated.
Cluster randomisation	A trial where the unit of randomisation is a cluster of participants (e.g. a school).
Controlled Before and After study (CBA)	Intervention groups are tested and data collected before and after the intervention has been administered. Differ from controlled non-randomised trials in that participants are not allocated to intervention or control groups, but rather a 'convenience' control sample is used.
Drug education programmes	Programmes that include a focus on illegal drugs or tobacco in addition to alcohol.
Effect size	Effect size is a term used for a family of indices that measure the magnitude of the relationship between variables or treatment effect. Effect sizes are commonly used in meta-analyses as unlike significance tests these indices are independent of sample size.
General health education programmes	Programmes that are health based but include aspects and outcomes relating to alcohol or sex and relationships
Intention to treat analysis	A method of data analysis in which all participants are analysed in the group they were assigned to at randomisation regardless of treatment adherence.
Internal validity	How well the study has minimised sources of bias and how likely it is that the intervention caused the observed outcomes.
Key stage	Pupils' progress through school is measured in key stages. Each key stage covers a number of school years. Starting at key stage 1 and finishing at key stage 4 (see Appendix 7).
Meta-analysis	The combination of quantitative evidence from a number of studies.
Non-Randomised Controlled Trial	These are trials where participants or clusters are allocated between intervention and control groups but the allocation is not randomised or quasi-randomised (e.g. alternate allocation).
Odds ratio	The odds of the event occurring in one group (e.g.

	intervention) divided by the odds of the event occurring in the other group (e.g. control).
Randomised Controlled Trial	Individuals or, defined groups of individuals (clusters) are randomised to either an intervention or a control group. If well implemented, randomisation should ensure that intervention and control groups only differ in their exposure to treatment.
Risk ratio	The risk of the event in the one group (e.g. intervention) divided by the risk of the event in the other group (e.g. control).
Social development programmes	Programmes that aim to impact upon alcohol use or sex and relationships through social development education
Solomon group four design	Population assigned to one of four groups including two experimental and two control groups. Two groups receive a pre-test and post-test, two groups receive only a post-test
Standardised mean difference	Expresses the size of the intervention effect in each study relative to the variability observed in that study.
Systematic review	A method of locating, appraising and synthesising evidence from primary studies, which adheres to a scientific methodology.
Uncontrolled Before and After Study	Intervention groups are tested and data collected before and after the intervention has been administered. No control group is used for comparison purposes.

List of abbreviations

AAPT	Adolescent Alcohol Prevention Trial
ALF	Allgemeine Lebenskompetenzen und Fertigkeiten
AMPS	Alcohol Misuse Prevention Study
BABES	Beginning Alcohol and Addictions Basic Education Studies
CBA	Controlled Before and After study
CMO	Chief Medical Officers
CWPT	Class wide peer tutoring
CSS	Case-control study
DARE	Drug Abuse Resistance Education
DAW	Drugs at Work
DfES	Department for Education And Skills
DH	Department of Health
ES	Effect Size
FAME	Family Action Model for Empowerment
GBG	Good Behaviour Game
GI	General information
GRAT	Get Real About Tobacco
HLAY	Here's Looking At You
ITT	Intention to treat
LEC	Life Education Centre
LIFT	Linking the Interests of Families and Teachers
LST	Life Skills Training
NICE	National Institute for Health and Clinical Excellence
NR	Not reported
NRCT	Non-Randomised Controlled Trial
OR	Odds Ratio
PADAPE	Preventing Alcohol and Drug Abuse Through Primary Education
PSHE	Personal Social and Health Education
PT	Post-test
PY/PM	Protecting You/Protecting Me
QCA	Qualifications and Curriculum Authority
R+	Rehearsal plus
RCT	Randomised Controlled Trial
RHC	Raising Healthy Children
SCW	Sex Can Wait
SD	Standard Deviation
SE	Standard Error
SR	Systematic Review

SRE	Sex and relationships education
SSDP	Seattle Social Development Project
STI	Sexually transmitted infection
SYF	Say Yes First
TITH	Tuning into Health

Executive Summary

Objectives

This review sought to identify effective and cost-effective interventions and programmes that focus on health literacy and personal skills in relation to alcohol and sex and relationships for primary school aged children.

Methods

The methods for the review followed NICE protocols for the development of NICE public health guidance. Eighteen databases were searched for effectiveness and cost-effectiveness studies published since 1990. Two reviewers independently screened all titles and abstracts. All data extraction and quality assessment was undertaken by one reviewer and checked for accuracy by a second reviewer. Each study was also graded (++, + or -) based on the extent to which the design and execution of the study minimised the potential sources of bias. Results of the data extraction and quality assessment for each study were presented in structured tables and as a narrative summary. Where possible, effect sizes were presented for individual studies, but heterogeneity across the included studies precluded meta-analysis.

Review of effectiveness

A total of two systematic reviews and meta-analyses, and 73 primary studies were included in the review of effectiveness. A broad range of programme approaches were identified including 14 studies which examined alcohol education approaches and nine studies of SRE approaches. Of the remaining studies, 33 studies examined drug education programmes that also focused on alcohol, three studies examined general health education programmes and 16 studies examined interventions which targeted developmental risk factors for later alcohol use and sexual behaviour.

Systematic reviews and meta-analyses

Two reviews were identified that evaluated school-based interventions for primary school aged children. One review focused specifically on the prevention of alcohol use and the other focused on substance use prevention. Both reviews concluded that there was limited evidence to determine which programme approaches were most effective for primary school aged children. In addition, one review suggested that school-based interventions targeting young adolescents may be more effective. Intervention with younger children was identified as most effective when it took place across multiple domains, most typically combining school and family-based intervention.

Evidence statement 1

There is strong evidence from two systematic reviews, which focused on the prevention of alcohol use, to suggest that interventions targeting primary school aged children may be less effective than those that target young adolescents. Interventions targeting alcohol use in primary school aged children may be more effective if they take place in more than one domain, for example by combining school and family components.

Alcohol education

Thirteen studies were identified that examined alcohol education programmes; nine studies were classroom-based curriculums led by teachers or external contributors, and four studies examined one-off intervention sessions. The Protecting You/Protecting Me programme was shown to have significant effects on knowledge about the effects of alcohol on development and the brain, and vehicle safety in relation to the prevention of exposure to drink driving. The long term effects on alcohol use behaviours was examined for three programmes (Alcohol Misuse Prevention Study, Adolescent Alcohol Prevention Trial and Protecting You/Protecting Me) but none of these programme had consistent long term effects on alcohol use.

Evidence statement 2

2(a) There is moderate evidence from two RCTs, one NRCT and one CBA study of a classroom-based programme to suggest that an intervention focused on alcohol prevention and vehicle safety can improve knowledge of the effects of alcohol on development and the brain, and vehicle safety in relation to drink driving. This evidence may be only partially applicable to the UK because the programme's emphasis on the prevention of injury through drink driving is only partially relevant to PSHE delivery in primary schools focusing on SRE and alcohol education.

2(b) There is insufficient and inconsistent evidence from three RCTs and one NRCT to determine the effects of alcohol education programmes on alcohol use in later years.

Drug education (including alcohol)

Thirty-two studies were identified that examined drug education programmes that included a focus on illegal drugs (and tobacco) in addition to alcohol. Twenty studies reported on 18 classroom-based programmes, led by teachers or external contributors. In addition, four studies reported on programmes that combined in-school approaches with parent education and eight studies reported on a range of other in-school approaches including theatre in

education and a programme based on a retreat format. There was a lack of evidence to determine the effects of drug education approaches on knowledge and attitudes in relation to alcohol use, and no consistent evidence for the effects of these programme on personal and social skills. There was evidence from one study of a culturally tailored programme for Native American students that the programme had long-term, positive effects on alcohol use.

Evidence statement 3

3(a) There is moderate evidence from one RCT to suggest that a culturally tailored skills training intervention for Native American students may have long-term effects on alcohol use. However, this evidence is not applicable to the UK given the cultural specificity of this programme. There is insufficient and inconsistent evidence from four RCTs, four CBA studies and one UBA study to determine the effects of other drug education approaches on alcohol use in later years.

Sex and relationships education

Nine studies were identified that examined seven programmes focusing on different approaches to sex and relationships education. Young people aged 10-12 years who participated in the Sex Can Wait programme reported long-term (>12 months) improvements in knowledge relating to the abstinence-based curriculum. The curriculum addressed self-esteem, reproductive anatomy and physiology, changes associated with puberty, values and decision-making skills. In addition, at the 18 month follow-up, participants in the Sex Can Wait programme were less likely to report that they had been involved in sexual activity in the past 30 days compared to a control group. Two programmes, an abstinence-orientated empowerment programme (FAME) and an HIV/AIDS prevention programme designed to promote communication, were shown to have effects on communication with parents. Participants in the FAME programme reported short term (<6 months) improvements in their communication with their parents, and the effects of the HIV/AIDS prevention programme resulted in medium term (up to 12 months) increases in communication with parents. There was no consistent evidence for the effects of sex and relationships education approaches on attitudes and values relating to sexual health.

Evidence statement 4

4(a) There is weak evidence from two NRCTs to suggest that an abstinence education programme that targeted children aged 10-12 years can improve sexual health knowledge, but the long term impact on sexual behaviours is less clear. This evidence may be directly applicable to the UK because the curriculum topic and content of this programme is relevant to PSHE delivery in primary schools focusing on SRE and alcohol education.

4(b) There is moderate evidence from one RCT to suggest that SRE programmes targeting communication, such as I Want to, I Can…Prevent HIV/AIDS, can improve parent and child communication about sexual health. This evidence may be directly applicable to the UK because the curriculum topic and content of these programmes are relevant to PSHE delivery in primary schools focusing on SRE and alcohol education.

4(c) There is inconsistent and insufficient evidence from two NRCTs, one CBA study and two UBA studies to determine the effectiveness of SRE programmes on attitudes and values relating to sexual health.

General health education

Three studies examined general health education programmes that included modules or curriculum topics related to alcohol education or SRE. All three studies were rated poorly in terms of their design and conduct and there was insufficient evidence to determine the effects of these programmes on outcomes relating to alcohol use and sexual health.

Evidence statement 5

5(a) There is insufficient and inconsistent evidence from two CBA studies and one UBA study to determine the effects of general health education programmes that targeted primary school age children on outcomes related to alcohol use and sexual health.

Social development

Sixteen studies were identified that examined seven programmes focused on social development interventions designed to positively influence behaviour in later life including alcohol use and sexual health behaviour. The majority of these programmes combined school- and family-based intervention components and were shown to have long term (>12 months) positive impacts on attachment to school, academic performance and problem behaviour, and improve social skills. At age 18, participants who received the Seattle Social Development Programme in grades 1-6 reported drinking on fewer occasions than control students and were less likely to have had sex, sex with multiple partners, or to have been pregnant. At age 21 although there was no effect of the intervention on alcohol use,

compared to control students, participants reported an older age of first sexual experience, fewer lifetime sexual partners, were less likely to have been pregnant and were more likely to use condoms. A Dutch study of the Good Behavior Game, which targeted in classroom behaviours, found that although participation did not have a significant effect on past year or past month alcohol use among 10-13 year olds, there was a reduced rate in the growth of alcohol use between these ages for students who participated in the programme. Follow up of students who participated in the Baltimore-based study of the programme as young adults, showed that participation in the Good Behavior Game was associated with lower rates of lifetime alcohol use and dependence.

Evidence statement 6

6(a) There is moderate evidence from one RCT, three NRCTs and one CSS study to suggest that programmes, which target social development and combine school and family-based components, may positively impact on attachment to school and academic performance. This evidence may only be partially applicable to the UK because these programmes were developed and evaluated in the USA, and the findings may not be generalisible beyond the populations studied.

6(b) There is moderate evidence from three RCTs, one NRCT and one CSS study to suggest that programmes, which target social development and combine school and family-based components, may have a positive impact on problem behaviours and social skills. This evidence may only be partially applicable to the UK because these programmes were developed and evaluated in the USA, and the findings may not be generalisible beyond the populations studied.

6(c) There is moderate evidence from two NRCTs to suggest that a social development programme, which combined school and family-based components, may have long term impacts on alcohol use and sexual behaviour in young adulthood. This evidence may only be partially applicable to the UK because these programmes were developed and evaluated in the USA, and the findings may not be generalisible beyond the populations studied.

6(d) There is strong evidence from three RCTs to suggest that the Good Behavior Game, which targeted behaviours in the classroom, may impact on alcohol abuse and dependence in adulthood and slow the rate of alcohol use in adolescence. This evidence may be directly applicable to the UK because although the programme was developed and evaluated in the USA, it has been replicated in populations outside of the USA.

Review of published economic evaluations

No published economic evaluation studies were identified for inclusion in the review.

Discussion and conclusions

Overall, this review of the effectiveness and cost-effectiveness of PSHE in primary schools focusing on SRE and alcohol education has highlighted a number of weaknesses in the evidence base. There is evidence that social development programmes, which combine school- and family-based components, may have long term impacts on school attachment, social skills, alcohol use and sexual health. However, the applicability of these programmes warrants further study in a UK context before widespread implementation can be supported. There is a lack of clear, long-term evidence for the effectiveness and cost-effectiveness of other approaches to SRE and alcohol education, and further good quality, UK-based research is needed.

1 Introduction

1.1 Aims and objectives

This review was undertaken to support the development of guidance by the National Institute for Health and Clinical Excellence (NICE) aimed at promoting school, college and community-based personal, social and health education (PSHE),[1,2] with particular reference to sexual health behaviour and alcohol. As such, the review sought to identify effective and cost-effective interventions and programmes that focus on health literacy and personal skills in relation to alcohol use and sexual health.

1.2 Research question

The following four research questions were addressed:

1 What services, interventions, programmes, policies or strategies for children aged 5-11 years old are effective and cost-effective in contributing to the achievement of the "Every child matters" outcomes for PSHE, related to sexual health and alcohol?

2 What elements/components of those services, interventions, programmes, policies or strategies for children aged 5-11 years old are effective and cost-effective in contributing to the achievement of the "Every child matters" outcomes for PSHE, related to sexual health and alcohol?

3 How can schools, governors, parents and carers, families and communities contribute to the effective and cost-effective delivery of PSHE – in particular, sex and relationship and alcohol education – to achieve health-related ''Every child matters'' outcomes in children aged 5-11 years old?

4 In what ways can professionals, practitioners, peers, volunteers and services in education and health settings provide effective and cost-effective support for the delivery of PSHE – in particular sex and relationship and alcohol education – in schools and communities?

[1] The term personal, social and health education is used in its broadest sense to refer to schools-based programmes and curriculum approaches that are intended to promote personal development and wellbeing.
[2] Since September 2008, PSHE has been referred to as Personal, Social, Health and Economic education (MacDonald, 2009) and this subject is covered under the umbrella term PSHE.

2 Background

Early onset sexual activity has been related to sexual risk-taking behaviour. The second National Attitudes and Lifestyles Survey (NATSAL, 2000) found that 30% of men and 26% of women in Britain reported having sex before the age of 16 (Wellings et al., 2001). Furthermore, Tripp and Viner (2005) found that 18% of boys and 15% of girls had experienced full sexual intercourse before age 15 years, with similar proportions having engaged in oral sex (Tripp & Viner, 2005). Unprotected sex at first intercourse is a risk factor for poor sexual health outcomes, for example teenage pregnancy, and data suggest that the use of contraception at first sex is declining (Wellings et al., 2001). Having unsafe sex at first intercourse is, in part through lack of knowledge, lack of access to contraception, lack of skills and self efficacy to negotiate contraception, having sex whilst under the influence of drugs or alcohol, or inadequate self efficacy to resist pressure. Around 10% of boys in the United Kingdom report that they were under the influence of drugs or alcohol when they first had sex, and 11% of girls report being pressurised by their partner when they first had sex. Of those under 16 years who have ever had sex, about a third to a half of both sexes report ever having had unsafe sex (Tripp & Viner, 2005). The result of this can be seen through the 19% increase in diagnoses of the top five sexually transmitted infections (STIs) for young people under age 16 years (Chlamydia, gonorrhoea, syphilis, warts, herpes) (Health Protection Agency, 2008).

Furthermore, the rate of teenage pregnancy in the UK has been one of the highest in Western Europe for the past ten years (Unicef, 2001), with 7.1% of all live births in 2008 attributed to mothers aged under 20 years (Department of Health, 2009). Initiatives to reduce the UK's under-18 teenage pregnancy rate by 50% in line with the 2010 targets (Social Exclusion Unit, 1999) have been largely unsuccessful. With current under 18 conception rates for England at 41.7 per 1000 young women aged 15-17 years, compared to 43.6 in 2000 (Office for National Statistics and Teenage Pregnancy Unit, 2009). The impact of teenage pregnancy on the mother can be lower educational achievement, a greater likelihood of raising a child as a single parent and fewer opportunities to gain good employment resulting in a low socio-economic status. Further, the child of a teenage parent is more likely to experience poor health, be a low academic achiever, be involved in crime, misuse drugs and alcohol and be more likely to become a teenage parent themselves, thereby perpetuating the cycle (Department of Health, 2009; Unicef, 2001). Wellings and colleagues (2001) showed that young people who leave school later after gaining qualifications are more likely to be sexually competent; more likely to use contraception at first sexual intercourse and are less likely to experience pregnancy. Long Acting Reversible

Contraception (LARC) and Emergency Hormonal Contraceptives (EHC) may be useful methods to prevent pregnancy yet there is a greater need for effective prevention interventions to address this issue. NATSAL participants aged 16-19 years reported that lessons at school were their most common source of sexual health information (Wellings et al., 2001), which highlights the impact of school-based prevention interventions.

The relationship between sexual risk-taking, substance misuse and anti-social behaviour has been previously highlighted (Independent Advisory Group on Sexual Health and HIV, 2007). A quarter of young people who binge drink become involved in anti-social behaviour and young people are most likely to begin drinking alcohol between age 11 to 15 years (Clemens et al., 2008). Over 30% of young people (aged ≤15 years) in the UK report ever being drunk two or more times compared to an average of 15% across other OECD (Organisation for Economic Cooperation and Development) nations (UNICEF, 2007). In England in 2007, 20% of 11 year olds reported that they had ever drank alcohol, with this figure increasing to 54% of 11-15 year olds reported ever drinking alcohol. Furthermore, the quantity of alcohol consumed weekly by 11 to 13 year old boys has increased by 6.4 units per week to 11.9 in 2006 compared to the 2001 figure. Girls consumed 8.4 units, up from 2.7 in 2001 (Department of Health, 2007). These data support the view that children who begin drinking young (typically below the age of 13) drink more often and in greater quantities and are more likely to drink to intoxication than those who delay drinking.

As with alcohol dependence and abuse; vulnerability to alcohol misuse in later adolescence appears greatest among those who begin drinking prior to age 13 (CMO, 2009). Alcohol dependence has also been associated with other psychopathological diagnoses such as nicotine dependence, drug dependence, and anti-social personality disorder (McGue & Iacono, 2008). Evidence suggests that early aggressive behaviours, including direct aggression, fighting, and hitting and those defined as conduct disorders have consistently are related to early initiation of underage drinking (Spoth et al., 2008). A further study by Malone and colleagues (2004) revealed a relationship between symptoms of alcohol dependence at age 17 and antisocial behaviour by age 20 in males, concluding that alcohol use may be the reason for antisocial behaviour persisting into adulthood. Regular alcohol use behaviour is already established in a minority of school children aged 11 to 12 years (around 1%) and this increases with age (Clemens et al., 2008). This highlights the fact that prior to beginning secondary school some young people will have already experienced a situation requiring self-efficacy, negotiation skills and knowledge of the negative aspects associated with risk activities, which could be influential in their decision not to participate (or to defer participation) in such activities until they are older. Recent draft guidance on alcohol consumption for young people from the Chief Medical Officers recognises that there are no

safe drinking limits for young people and recommends that those under the age of 15 years should not consume any alcohol (CMO, 2009).

2.1 Factors influencing alcohol use and sexual health behaviours

Socio-economic status and in particular high levels of deprivation are associated with increased alcohol use and poor sexual health outcomes (Bellis et al., 2009). In addition, evidence supports the view that early risk-taking behaviour such as sexual behaviour and alcohol misuse may be influenced by early onset puberty which can influence social decision-making (Bellis et al., 2006; Costello et al., 2007; Goodson et al., 1997). Furthermore, young people who mature earlier are more likely to socialise with older peers and subsequently participate in high-risk behaviours (Zimmer-Gembeck et al., 2008). Young people's sexual and drinking behaviour can also be a result of young people attempting to demonstrate their developing maturity, as a means of experimenting with new found curiosities and in an attempt to mimic perceived adult behaviours (see Table 2.1). Young people's drinking behaviour can also be strongly influenced by parental drinking patterns, for example, children of problem drinkers are more likely to develop drinking problems (van Der Vost et al., 2009). Positive social norms regarding drinking, either through family, peers or the media can influence young people's attitudes and behaviours. This can be the case, particularly if parents do not discourage their child's alcohol use.

Table 2.1. Risk and protective factors for adolescent sexual behaviour, use of contraception, pregnancy and childbearing

Community	**Community disadvantage and disorganisation**
	+ High level of education
	- High unemployment rate
	+ High income level
	- High crime rate
Family	**Structure and economic advantage**
	+ Two (vs. one) parent families
	- Changes in marital status
	+ High level of parent's education
	+ High parental income
	Positive family dynamics and attachment

	+ Parental support and family connectedness
	+ Sufficient parental supervision and monitoring
	Family attitudes about and modelling of sexual risk taking and early childbearing
	- Mother's early age at first sex and first birth
	- Single mother's dating and cohabitation behaviours
	+ Conservative parental attitudes about premarital or teen sex
	+ Positive parental attitudes about contraception
	- Older sibling's early sexual behaviour and age of first birth
Peer	**Peer attitudes and behaviours**
	+ High grades amongst friends
	- Peer's substance use and delinquent and non-normative behaviour
	- Sexually active peers (or perception thereof)
	+ Positive peer norms or support for condom or contraceptive use
Partner	**Partner attitudes**
	+ Partner support for contraception
Teen	**Biological antecedents**
	- Older age and greater physical maturity
	- Higher hormone levels
	Ethnicity
	+ Being White (vs. Black or Hispanic)
	Attachment to and success in school
	+ Good school performance
	+ Educational aspirations and plans for the future
	Attachment to religious institutions
	+ Frequent religious attendance
	Problem or risk-taking behaviours

	- Tobacco, alcohol or drug use
	- Problems behaviours or delinquency
	- Other risk behaviours
	Emotional distress
	- Higher level of stress
	- Depression
	- Suicide ideation
	Characteristics of relationship with partners
	- Early and frequent dating
	- Going steady, having a close relationship
	- Greater number of romantic partners
	- Having a partner 3 or more years older
	Sexual abuse
	- History of prior sexual coercion or abuse
	Sexual beliefs, attitudes and skills
	+ Conservative attitudes towards premarital sex
	+ Greater perceived susceptibility to pregnancy, STDs/HIV
	+ Importance of avoiding pregnancy, childbearing and STDs
	+ Greater knowledge about contraception
	+ More positive attitudes about contraception
	+ Greater perceived self-efficacy in using condoms or contraception
Key: + protective factor; - risk factor	

Source: Kirby D (2001) Emerging Answers: Research Findings on Programs to Reduce Teen Pregnancy. Washington: National Campaign to Prevent Teenage Pregnancy

2.2 Personal, social and health education

From 2010, PSHE education is expected to become a statutory requirement for both primary and secondary schools; however, currently PSHE education consists of a non-statutory

framework (with citizenship). At Key Stages 1 and 2 there are four broad themes to the curriculum:

- Developing confidence and responsibility and making the most of pupils' abilities;
- Preparing to play an active role as citizens;
- Developing a healthier, safer lifestyle; and
- Developing good relationships and respecting differences between people.

Sex and relationships education curriculum and standards guidance (Department for Education and Employment, 2000) states that at primary school level, sex and relationship education (SRE) should contribute to PSHE education by ensuring that all children:

- Develop confidence in talking, listening, and thinking about feelings and relationships;
- Are able to name parts of the body and describe how their bodies work;
- Can protect themselves and ask for help and support;
- Are prepared for puberty

Alcohol education is also located within wider provision for PSHE, and according to curriculum guidance (Qualifications and Curriculum Authority, 2003) should enable pupils to increase knowledge and understanding, explore attitudes, and develop skills for making healthy, informed choices, including choices about drugs, alcohol and tobacco. The non-statutory framework for PSHE is presented is Appendix 1.

2.3 Government policy

The public health White paper *Choosing Health: making healthy choices easier* (2004) acknowledges and supports the need for comprehensive PSHE. The White paper promotes the *healthy schools programme* which encourages a whole school approach to health that includes comprehensive PSHE that incorporates sex, relationships and alcohol education (Department of Health, 2005). Furthermore, schools must comply with this element if they are to achieve their Healthy School status (Department of Health, 2004). Additional guidance for schools recommends that all young people, starting from early key stages, receive age and ability appropriate drug (including alcohol) education that helps to develop their knowledge, skills, attitudes and understanding of drugs in order to build an appreciation of healthy lifestyles (Department for Education and Skills, 2004a). Currently, compulsory education on sex and alcohol is via the national science curriculum and addresses the effects of alcohol on mental and physical health of a person. Additionally, this curriculum addresses the human reproductive cycle, including conception, adolescence and sexually transmitted infections. This level of education is reserved for key stage three curricula

designed for secondary school pupils (Qualifications and Curriculum Authority, 2007). However, at key stage 2 pupils are introduced to the topic of alcohol and its effects on health and human growth is addressed from key stage 1 (Qualifications and Curriculum Authority, 1999). Sex and relationship and alcohol education in schools, delivered through PSHE, supports the healthy living blueprint for schools and the extended schools guidance to improve access to general health as well as sexual health advice and services (Department for Education and Skills, 2004b; 2006a; 2007). A curriculum that adopts a prevention approach to sex and substance use also supports the accelerated teenage pregnancy strategy which recognises that those local authorities (LA) and primary care trusts that are expected to reach the 2010 teenage pregnancy targets have given PSHE a high priority within schools and have received LA support to develop comprehensive SRE in all schools. Furthermore, LAs successfully reducing the rates of teenage pregnancy were those that provided SRE training packages that were taken up by teachers (Department for Education and Skills, 2006b). The focus on school and parental responsibility remains a key issue in the education of young people. Work has been carried out as part of the Extended Schools Programme to support parents and aims to tackle early emotional and behavioural problems. Evidence shows that parenting programmes are effective at tackling conduct disorders and improving parenting (Lindsay et al., 2008). The Parenting Early Intervention Programme (PEIP) targets parents of children age 8 to 13 years at risk of negative outcomes and will be rolled out across all local authorities from April 2009 (Lindsay et al., 2008).

The latest review of the National Strategy for Sexual Health and HIV (Christophers et al., 2008) also supports statutory and comprehensive SRE and furthermore it calls for the introduction of SRE for young people not in education. In addressing the wider remit for sexual health the aims of the strategy are to:

- Reduce transmission of HIV and STIs
- Reduce prevalence of undiagnosed HIV and STIs
- Reduce unintended pregnancy
- Improve health and social care for people living with HIV
- Reduce the stigma associated with HIV and STIs

Following on from this strategy the review aims to focus on those issues related to the strategy that are likely to accelerate its implementation with five key strategic areas aiming to:

- Prioritise sexual health as a key public health issue and sustain high-level leadership at local, regional and national levels

- Build strategic partnerships
- Commission for improved sexual health
- Investing more in prevention, and
- Deliver modern sexual health services

The Alcohol Harm Reduction Strategy for England was published in 2004. Its four key aims were to:

- Improve the information available to individuals and to start the process of change in the culture of drinking to get drunk
- To better identify and treat alcohol misuse
- To prevent and tackle alcohol-related crime and disorder and deliver improved services to victims and witnesses
- To work with the alcohol industry to tackle the harms caused by alcohol.

Subsequently the next steps in the national alcohol strategy (Department of Health, 2007) aim to further reduce the harm associated with alcohol misuse by working to:

- Ensure that laws and licensing powers protect young people and successfully address the issues relating to irresponsibly managed premises.
- Focus on the minority of drinkers who cause or experience the most harm, such as: young people under age 18 years who drink; those 20-24 years who binge drink; and harmful drinkers.
- Shape the environment so that it encourages sensible drinking.

Following from this guidance reducing alcohol-related hospital admissions is now a measure of performance. The alcohol Improvement Programme is supporting Primary Care Trusts (PCTs) to address the needs of patients who consume harmful or hazardous levels of alcohol. Improve the health messages, and in particular alcohol unit information, on labels and work with the alcohol industry to encourage responsible promotions. Further work is currently being carried out in order to address alcohol-related influences on young people. The Home Office is in the process of consulting on the forthcoming mandatory licensing code of practice which aims to tackle irresponsible sales of alcohol and associated crime. This incorporates a commitment to examine the impact of alcohol advertising and the influence of displaying alcohol (Home Office, 2009).

The Department for Children, Schools and Families (formerly the Department for Education and Skills) recommends a joint approach between Every Child Matters and the drug strategy in order to prevent drug harm (including alcohol). They propose three main objectives, which are to:

- Reform delivery and reforming delivery through closer links between the Updated National Drug Strategy and the Every Child Matters: Change for Children locally, regionally and nationally
- Ensuring provision is built around the needs of vulnerable children and young people. Including more focus on prevention and early intervention with those most at risk, with drug misuse considered as part of assessments, care planning and intervention by all agencies providing services for children, including schools
- Building services and workforce capacity. Developing a range of universal, targeted and specialist provision to meet local needs and ensure delivery of workforce training to support it.

3 Methodology

3.1 Search strategy

Systematic searches of electronic databases and websites were undertaken to identify studies that examined the effectiveness and/or cost-effectiveness of alcohol education and/or SRE delivered in isolation or as part of a wider programme of study such as PSHE or its equivalents. Searches were conducted across a range of health, education and social care databases as shown in Box 3.1.

Box 3.1. Health, education and social care databases

- ASSIA (Applied Social Science Index and Abstracts)
- CINAHL (Cumulative Index of Nursing and Allied Health Literature)
- Database of Abstracts of Reviews of Effectiveness (DARE)
- The Cochrane Library
- EMBASE
- ERIC
- British Education Index
- Australian Education Index
- HMIC (or Kings Fund catalogue and DH data)
- MEDLINE
- PsycINFO
- Sociological Abstracts
- Social Science Citation Index
- EPPI Centre databases
- The Campbell Collaboration
- C2-SPECTR & C2-PROT Campbell Collaboration

Economic evaluation studies were identified by searching the following major health economics databases:

- NHS Economic Evaluations Database (NHS EED),
- EconLit

3.2 Inclusion and exclusion criteria

3.2.1 Population

Studies were eligible for inclusion if they included children aged 5 to 11 years old in full time education. This included children in primary schools and those receiving education outside of a mainstream school setting including:

- children receiving home education,
- children receiving education in pupil referral units.

3.2.2 Interventions

Studies were eligible for inclusion if they examined interventions that focused on SRE and/or alcohol education. Relevant intervention approaches included:

- Interventions and programmes agreed, planned or delivered by teachers or other professionals.
- Interventions and programmes planned and/or delivered by external agencies and individuals.
- Intervention involving the 'informal' and extended school curriculum.
- Peer led education

3.2.3 Comparator(s)

Studies were eligible for inclusion if they compared the intervention of interest against a no intervention control or against another intervention approach. Studies that did not include a control group for comparison were also eligible for inclusion.

3.2.4 Outcomes

Studies were eligible for inclusion if they examined the following key outcomes in relation to alcohol education and sex and relationships education:

- Knowledge and understanding,
- Personal and social skills,
- Attitudes and values,
- Health and social outcomes related to alcohol use and sexual health.

3.2.5 Study design

Systematic reviews, randomised controlled trials, controlled non-randomised studies and, controlled and uncontrolled before and after studies that compared a school-based intervention against no intervention or another type of intervention were eligible for inclusion in the assessment of effectiveness.

Studies were eligible for inclusion in the assessment of cost-effectiveness if they were economic evaluations conducted alongside trials, modelling studies and analyses of administrative databases. Only full economic evaluations that compared two or more options and considered both costs and consequences (including cost-effectiveness, cost-utility and cost-benefit analyses) were included.

3.3 Study selection and data extraction strategy

All titles and abstracts retrieved were screened independently by two reviewers (LJ, GB, JD, HS) according to the inclusion/exclusion criteria described above. Disagreements were resolved through consensus and where necessary a third reviewer was consulted. Relevant articles were retrieved in full and full text screening was undertaken independently by two reviewers (LJ, GB, JD, CS).

One reviewer (LJ, GB, JD) independently extracted and assessed the quality of the individual studies into an Access database. All data extraction and quality assessment were independently checked for accuracy by a second reviewer. The results of the data extraction are presented in an addendum to this report.

3.4 Quality assessment strategy

The quality of the studies was assessed according to criteria set out in the NICE Centre for Public Health Excellence Methods Manual (2009). Each of the effectiveness and cost-effectiveness studies was graded using a code, ++, + or – based on the extent to which the potential sources of bias had been minimised:

- ++ All or most of the criteria have been fulfilled. Where they have not been fulfilled the conclusions are thought very unlikely to alter.
- \+ Some of the criteria have been fulfilled. These criteria that have not been fulfilled or not adequately described are thought unlikely to alter the conclusions.
- \- Few or no criteria have been fulfilled. The conclusions of the study are thought likely or very likely to alter.

3.5 Methods of analysis/synthesis

3.5.1 Effectiveness studies

The results of the data extraction and quality assessment for each study of effectiveness are presented in structured tables and as a narrative summary. The possible effects of study quality on the effectiveness data and review findings are also discussed within the text of the review.

Studies are grouped according to intervention approach (e.g. teacher or external contributor, curriculum or whole school approach) and the outcomes examined. Where sufficient data were available, intervention effect sizes have been calculated and presented as risk ratios (RR) for dichotomous data and as mean differences for continuous data. Where study authors reported intervention effect sizes, these have been extracted directly as RRs or odds ratios (OR) as reported in the original publication. Forest plots were generated for single studies using RevMan (version 5) and are presented in an addendum to this report.

Heterogeneity between the included studies was assessed by considering differences in (a) the study population, (b) intervention approach, (c) outcome measures, and (d) study quality. However, given the anticipated heterogeneity between the included studies it was judged to be unlikely that pooling would be appropriate or feasible.

3.5.2 Published economic evaluations

No published economic evaluations were identified.

3.6 Deriving evidence statements and assessing applicability

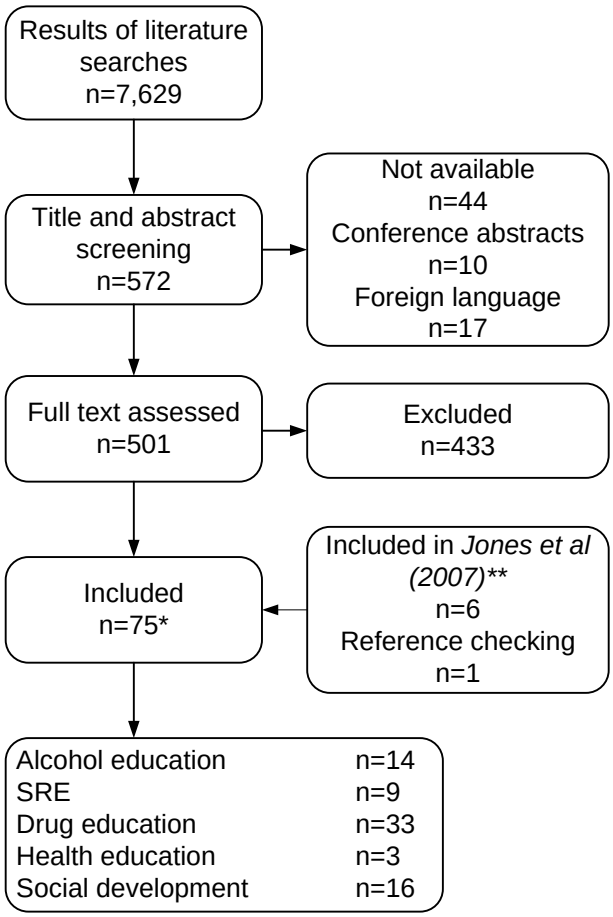
Evidence statements were derived based on the strength of the evidence in relation to intervention approach and the outcomes examined. The strength of evidence was determined by considering the quality, quantity and consistency of the evidence presented in the included studies.

Each evidence statement was assessed to judge applicability based on the similarity of the population, setting, intervention and outcomes of the included studies to the criteria outlined in the review question.

4 Summary of study identification

4.1 Review of effectiveness and cost-effectiveness

A total of 7,629 references were identified from the literature searches. Following screening of titles and abstracts, 572 studies were identified as potentially relevant. Of these, 17 references were for foreign language articles, 10 were for conference abstracts and 44 were not available in time for assessment. References for these articles are presented in Appendix 4. A total of 501 full text articles were screened for inclusion. The process of study identification is summarised in Figure 4.1.



*Includes a further 14 studies included in *Jones et al (2007)*

**Not identified in the literature searches conducted for this review

Figure 4.1. Summary of study identification

4.1.1 Included studies

A total of 68 articles met the criteria for inclusion in the review of effectiveness, including 14 articles that were included in a systematic review of the effectiveness and cost-effectiveness of interventions in primary and secondary schools to prevent and/or reduce alcohol use, previously conducted by the lead author and colleagues (Jones et al., 2007). In addition, six articles included in the previous review but not identified in the searches for this review met the criteria for inclusion and one article was identified through reference checking. Therefore, a total of 75 articles were included in the review of the effectiveness. No articles met the criteria for inclusion in the review of cost-effectiveness.

Studies were initially grouped according to whether they focused on SRE or alcohol education. However, an additional group of studies (n=16) examined interventions which targeted developmental risk factors for later alcohol use and sexual behaviour and these were grouped together as social development programmes. Initially the majority of the articles identified were grouped together as alcohol education (n=50), however these articles were further subdivided into those programmes which focused specifically on alcohol (n=14), substance use including alcohol (n=33), or general health education (n=3).

Of the 75 articles identified for inclusion, two articles were systematic reviews/meta-analyses, 33 articles reported on randomised controlled trials (RCTs) and 15 articles reported on non-randomised controlled trials (NRCTs). In addition, 25 articles reported on observational studies, 11 of which did not include a control group. The range of study designs identified for inclusion in the review is presented in Table 4.1.

Table 4.1. Summary of study designs identified for inclusion

Section	Total	Study design				
		SR/MA	RCT	NRCT	CBA	UBA
Alcohol education	14	1	10	1	1	1
SRE	9	0	2	3	1	3
Drug education	33	1	12	5	9	6
Health education	3	0	0	0	2	1
Social development	16	0	9	6	1	0
Total	***75***	***2***	***33***	***15***	***14***	***11***

SR/MA – systematic review or meta-analyses; RCT – randomised controlled trial; NRCT – nonrandomised controlled trial; CBA – controlled before and after study; UBA – uncontrolled before and after study

Over 80% of the articles identified reported on studies conducted in the USA (n=59). Six articles reported on studies conducted in the UK, and the remaining eight articles reported

on studies conducted in Canada (n=3), Australia (n=2), Germany, Mexico, and The Netherlands (all n=1).

4.1.2 Excluded studies

A total of 433 studies did not meet the criteria for inclusion in the review. References for the excluded studies are presented in Appendix 3. Excluded studies were grouped according to the reason for exclusion, studies were excluded because: (1) the intervention examined did not focus on SRE or alcohol education (n=184); (2) the intervention targeted groups of at-risk or high-risk young people (n=49); (3) the study did not meet the design criteria for inclusion (n=137); (4) the intervention was not school-based (n=13); or (5) the population targeted was not relevant to the review question (n=50).

5 Review of effectiveness

5.1 Systematic reviews and meta-analyses

5.1.1 Overview of evidence identified

Two reviews were identified that evaluated school-based interventions for primary school aged children (Spoth et al., 2008; Gottfredson & Wilson, 2003). Spoth and colleagues (2008) specified interventions that addressed alcohol use and Gottfredson and Wilson (2003) reviewed studies aiming to prevent substance use, including alcohol.

Quality Assessment

Both reviews (Gottfredson and Wilson 2003; Spoth et al., 2008) were coded 'SR ++' for quality. Both were well conducted reviews, which stated an appropriate research question, fully described the literature search process and methodologies applied and assessed the quality of included studies.

Findings

Gottfredson and Wilson (2003; SR ++) reviewed 94 studies of interventions to reduce problem behaviours in children with the long-term aim of reducing substance abuse. They reported that interventions in primary-school aged children were less effective than programmes delivered to adolescents and that only programmes targeted at middle-school aged children produced evidence clearly indicating reductions in alcohol or any other drug use. A key focus of the review was on high risk students and interventions were reported to be more effective when delivered to higher risk children. However, this finding was based on the results of only five studies and the difference in the effect sizes calculated was not significant. Briefer programmes of 4.5 months or less were found to be generally as effective as longer term interventions and peer only delivered interventions were the most effective form of intervention.

Likewise, Spoth and colleagues (2008; SR ++) concluded that there was only limited research evidence on interventions that targeted emerging alcohol use amongst primary school-aged children. Programme effects on risk behaviours for alcohol use, such as aggressive or problem behaviour, rather than alcohol use *per se* were reported in studies targeting younger children and students were rarely followed up into middle or high school. The authors reported that interventions in primary school-aged children were more effective if they took place in more than one domain, and studies typically included school and family based components.

5.1.2 Summary and evidence statements

Two systematic reviews were identified for inclusion. The review by Spoth and colleagues (2008; SR ++) focused specifically on the prevention of alcohol use, whereas Gottfredson and Wilson (2003; SR ++) focused on substance use prevention.

Both reviews concluded that there was limited evidence to determine which programme approaches were most effective for primary school aged children, and Gottfredson and Wilson (2003; SR ++) suggested that school-based interventions targeting young adolescents may be more effective. Spoth and colleagues (2008; SR ++) suggest that intervention with younger children may be most effective when it takes place across multiple domains, most typically combining school and family-based intervention.

Evidence statement 1

There is strong evidence from two systematic reviews[1], which focused on the prevention of alcohol use, to suggest that interventions targeting primary school aged children may be less effective than those that target young adolescents. Interventions targeting alcohol use in primary school aged children may be more effective if they take place in more than one domain, for example by combining school and family components.

[1] Gottfredson & Wilson, 2003 (SR ++); Spoth et al., 2008 (SR ++)

Table 5.1. Summary table for systematic reviews and meta-analyses

Author (Year)	Design	Inclusion/Exclusion	Number of studies	Findings
Gottfredson & Wilson, 2003	SR ++	Interventions to reduce problem behaviours among children/youth that measured alcohol or other drug use	94 studies included	Cognitive-behaviourally based prevention programmes were more effective at reducing substance use when delivered to high-risk than general school population studies, but this was based on just 5 studies and the difference was non-significant. Peer alone delivered interventions were most effective.
Spoth et al., 2008	SR ++	Intervention studies that reduce problem behaviours in children and include outcomes related to substance use	41 studies included	Few elementary school interventions were followed up long enough to test their effect on alcohol use. A number of interventions showed significant reductions in aggression and disruption.

5.2 Alcohol education

5.2.1 Overview of evidence identified

A total of 13 primary studies were identified that examined alcohol education programmes targeting children aged 11 years and under. Nine studies were classroom-based curriculums led by teachers or external contributors, and four studies examined one-off intervention sessions.

5.2.2 Classroom-based programmes led by teachers or external contributors

Nine studies were identified that examined four classroom-based alcohol education programmes. Shope and colleagues (1992) reported on the Alcohol Misuse Prevention Study (AMPS) which examined a social pressures resistance-training curriculum for children in fifth and sixth grade. Gamble and Burgess (1994) reported on an alcohol awareness programme for fifth grade students that emphasised the negative effects of alcohol and Donaldson and colleagues (1995; 2000) reported on the Adolescent Alcohol Prevention Trial (AAPT), a social influence-based programme for students in fifth or seventh grade. Five studies (Bell et al., 2005a, 2005b, 2007; Bohman et al., 2004; Padget et al., 2006) reported on the Protecting You/Protecting Me (PY/PM) programme which taught children in the first to fifth grade about alcohol and vehicle safety. A summary of the content for each of these programmes is presented in Table 5.2.

Table 5.2. Summary of programme content: Alcohol education programmes led by teachers or external contributors

Programme	Reference(s)	Programme components
AMPS	Shope et al., 1992	• Teacher-led social pressures resistance training curriculum • 4 sessions delivered over 4 weeks in first year (5th and 6th grade classes) • 3 booster sessions in second year (5th grade classes only)
Alcohol awareness programme	Gamble & Burgess, 1994	• 8 lessons delivered over 10 weeks • Lessons covered the effects of alcohol on mind and body, decision making skills, media influence and problems associated with alcohol • Delivered by classroom teachers
AAPT	Donaldson et al., 1995; 2000	• Delivered by trained project staff Four conditions • 8 lessons of resistance skills training • 8 lessons of normative education • 10 lessons of combined resistance skills training and normative education • 4 lessons information only control
Protecting You/Protecting Me	Bell et al., 2005a; 2005b; 2007; Bohman et al., 2004; Padget et al., 2006	• Teacher or peer led (high school students) alcohol prevention and vehicle safety programme • Programme taught in grades 1-5 • 8 lessons per grade; 1 hour per lesson

5.2.2.1 Alcohol Misuse Prevention Study (AMPS)

The AMPS curriculum was designed as a social pressures resistance-training curriculum with the aim of teaching students about alcohol use and misuse. Shope and colleagues (1992) examined a version of the curriculum delivered over two years with four sessions delivered over four weeks in the first year and three additional "booster" sessions delivered one week apart in the second year. Schools (fifth and sixth grade classes) were assigned to receive the curriculum plus booster (fifth grade classes only), curriculum only or control.

Quality assessment

Shope and colleagues (1992) randomly assigned 49 schools to a pretest or no pretest condition, and then to intervention or control conditions. It was difficult to judge whether the study had been well conducted because few details were reported about the study methodology. In addition, the authors reported little information on the pretest equivalence of the sample and attrition was relatively large over the two and half year duration of the study (28% were lost to follow-up). The study was therefore rated 'RCT –'.

Findings

Shope and colleagues (1992; RCT –) found that there were no significant differences in levels of alcohol use or misuse[3] between fifth and sixth grade students who received the AMPS curriculum (with or without booster sessions) and students in the control group at any follow-up. Shope and colleagues (1992; RCT -) also measured understanding of the AMPS curriculum material using a curriculum index score. Intervention students scored significantly higher on the curriculum index than comparison students at all three post-test assessments ($p<0.001$). Effect sizes were calculated for the follow-up when students where in the seventh and eighth grade and are shown in Table 5.3, Table 5.4 and Table 5.5.

Table 5.3. AMPS: Alcohol use in 7/8th grade (Shope et al., 1992; RCT –)

Comparison	Intervention			Control			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Fifth grade							
Curriculum + booster vs. control	0.62	1.04	406	0.68	1.25	458	-0.05 (-0.19, 0.08)
Curriculum vs. control	0.59	1.03	541	0.68	1.25	458	-0.08 (-0.20, 0.05)
Sixth grade							
Curriculum vs. control	0.89	1.28	922	0.94	1.45	421	-0.04 (-0.15, 0.08)

[3] Alcohol misuse was measured by 10 items reflecting overindulgence, trouble with peers and trouble with adults experienced as a result of alcohol use.

Table 5.4. AMPS: Alcohol misuse in 7/8th grade (Shope et al., 1992; RCT –)

Comparison	Intervention			Control			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Fifth grade							
Curriculum + booster vs. control	0.85	1.5	416	0.8	1.52	462	0.03 (-0.10, 0.17)
Curriculum vs. control	0.79	1.47	564	0.8	1.52	462	-0.01 (-0.13, 0.12)
Sixth grade							
Curriculum vs. control	1.17	1.71	974	1.27	1.87	449	-0.06 (-0.17, 0.06)

Table 5.5. AMPS: Curriculum index scores in 7/8th grade (Shope et al., 1992; RCT –)

Comparison	Intervention			Control			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Fifth grade							
Curriculum + booster vs. control	10.31	3.26	429	8.55	2.9	484	0.57 (0.44, 0.70)
Curriculum vs. control	9.62	2.98	590	8.55	2.9	484	0.36 (0.24, 0.48)
Sixth grade							
Curriculum vs. control	10.48	3.01	1009	9.68	2.83	462	0.27 (0.16, 0.38)

5.2.2.2 Alcohol awareness programme

Gamble and Burgess (1994) developed an awareness programme for fifth grade elementary school students (mean age 10.9 years), which emphasised the negative effects that alcohol could have both on their lives and the lives of others. The programme consisted of eight lessons that covered the effects of alcohol on the mind and body, decision making skills, media influence and problems associated with alcohol. The programme was implemented by a student teacher at a local college.

Quality assessment

The curriculum was examined using an uncontrolled before and after design. Sixty-five children participated in the study and follow-up was based on immediate post-test. Overall due to the weak study design utilised the study was rated '–'.

Findings

Gamble and Burgess (1994; UBA –) examined the effects of the alcohol awareness curriculum on knowledge. Several of the items tested indicated that there had been no change in knowledge between pre and post-test scores. However, students showed improvements of 50% or more on four items: the concept that alcohol is a drug, all alcoholic beverages have equivalent amounts of alcohol, the effects of alcohol on the body and that

alcoholics can be anyone. The authors noted that girls showed more of an overall improvement in knowledge than boys.

5.2.2.3 Adolescent Alcohol Prevention Trial (AAPT)

The AAPT curriculum, taught entirely by trained project staff, was based on social influence theory and aimed at the prevention of alcohol misuse (Donaldson et al., 1995; 2000). Four different intervention approaches were examined: resistance skills training; normative education; a combination of resistance skills training and normative education; and information provision only. Students either received the main programme in fifth grade and a booster programme in seventh grade, or received the main programme in seventh grade only.

Quality assessment

The AAPT was based on an RCT design with schools as the unit of assignment (RCT –). Few methodological details were reported regarding the method of randomisation and details were not reported on the baseline comparability of participants. Donaldson and colleagues (1995) did not clearly report how many participants or clusters were randomised to each condition, and details on attrition were also lacking.

Findings

Donaldson and colleagues (1995; RCT –) found that among students who believed it was not acceptable to drink alcohol there was a significant positive relationship between seventh grade refusal skills and eighth grade alcohol use (fifth grade students: $p<0.05$; seventh grade students: $p<0.01$). The same analysis for adolescents who believed that it was acceptable to drink revealed a positive, but non-significant relationship between seventh grade refusal skills and eighth grade alcohol use. Donaldson and colleagues (2000; RCT -) analysed additional data from AAPT students using both self-report and reciprocal best friend reports of alcohol (and other substance) use. Results were separately analysed for students attending public and private schools. For the sample of students attending public schools, those who received normative education reported significantly lower scores on the alcohol index measure and significantly lower rates of lifetime alcohol use in the eighth ($p<0.01$), ninth ($p<0.01$) and tenth grades ($p<0.05$; 1-, 2- and 3-year follow-ups, respectively) compared to students receiving comparison interventions. In addition, students who received normative education reported lower rates of 30-day alcohol use at the 1- and 3-year follow-ups ($p<0.001$ and $p<0.05$, respectively) and drunkenness at the 1- and 2-year follow-ups (both $p<0.01$). For the majority of outcomes, students who received resistance skills training reported using alcohol significantly more often than students who had not received resistance skills training. For the sample of students in private schools, there were no effects

of normative education on alcohol use behaviours at any follow-up. However, private school students who received resistance skills training reported significantly lower rates of 30-day alcohol use at the 1- and 3-year follow-ups (both $p<0.01$) and a lower prevalence of drunkenness at the 3-year follow-up ($p<0.05$).

5.2.2.4 Protecting You/Protecting Me (PY/PM)

Five studies (Bohman et al., 2004; Bell et al., 2005a; 2005b; 2007; Padget et al., 2006) reported on evaluations of the PY/PM programme. The programme was delivered over 5 years from the first to fifth grade and consisted of 8 lessons a year (40 lessons in total), which focused on teaching students about the adverse effects of alcohol on the brain and vehicle safety skills. The programme was taught either by elementary school teachers or high school students enrolled in a peer-helping course. Two studies (Bohman et al., 2004; Bell et al., 2005a) examined the effects of the peer led programme for third to fifth grade students and one study examined effects on first and second grade students (Bell et al., 2007). Bell and colleagues (2005b) examined the effects of a teacher led version of the programme on fourth and fifth grade students who had received the programme in previous school years and Padget and colleagues (2006) examined the effects among fifth grade students who had received consecutive years of PY/PM programming (peer or teacher led).

Quality assessment

Three evaluations of the PY/PM programme were based on RCT cluster designs. All three RCTs generally followed the same methodology with elementary schools at each intervention site (based on proximity to a high school with students enrolled in a peer-helping course) randomised to either the intervention or control condition. Study methodology was fairly well reported across the three RCTs, with the exception of Bell and colleagues (2005a), which did not report adequate information on participants lost to follow up and outcomes were reported at post-test only. The study of the teacher led version of PY/PM was reported to be based on a 'quasi-experimental design' (Bell et al., 2005b), however as the authors did not describe how participants were allocated to the intervention and control groups, it was labelled a CBA. Other aspects of the methodology were adequately reported and the study was rated '+' for internal consistency. Padget and colleagues (2006) also used a quasi-experimental design (NRCT) to examine the effects of PY/PM. The intervention group consisted of fifth grade classrooms from five schools that had begun implementing the PY/PM programme five years previously. Intervention and comparison schools were matched on size, racial/ethnic composition, and percentage of students eligible for free lunches. However, intervention and control schools did not appear to be well matched in terms of size or 'economic disadvantage'. On the whole the study appeared to have been

adequately conducted and attrition across the study was relatively low. This study was therefore coded 'NRCT +'.

Findings

a) First and second grade students

Bell and colleagues (2007; RCT +) reported that there were significant programme effects for one measure of knowledge about the brain ($p<0.05$), but not on a second that examined knowledge of brain importance. There were also significant programme effects for three out of four measures relating to vehicle safety (all $p<0.05$), for one out of two media awareness questions ($p<0.001$), and on attitudes towards the harm of teenage drinking ($p<0.05$). The programme did not have any effect on decision making or use of rules in first and second grade students.

b) Third to fifth grade students

The first year evaluation of the programme with third, fourth and fifth grade students (Bohman et al., 2004; RCT +) found that the programme had significant effects on media literacy ($p<0.05$) and knowledge of brain development ($p<0.001$) at post-test and follow up. Significant gains were also made in the intervention group in terms of vehicle safety skills; intervention students reported a greater increase in vehicle safety skills and fewer intentions to ride with an alcohol impaired driver relative to the control group at post-test and follow up ($p<0.05$). There was no significant effect of the programme on the following measures: knowledge of brain importance, attitudes to drinking and driving, underage drinking, rules, stress management, social skills and decision making.

In the second year evaluation of the programme (Bell et al., 2005a; RCT +), significant gains were made in media literacy and vehicle safety skills in the intervention group compared to the control group at post-test ($p<0.05$ and $p<0.01$, respectively), but there were no other significant changes in mean knowledge scores in the tested areas. There were no significant changes at post-test in mean skill scores on the measures of decision making, stress management or social skills or in attitudes to drinking.

c) Students with consecutive years of programming

Bell and colleagues (2005b; CBA +) examined the effects of a teacher led version of the programme on fourth and fifth grade students, who had been taught the PY/PM programme in previous school years. The authors reported that a significant impact of PY/PM was found for six out of eight outcome measures. Students in the intervention group gained stress management and decision-making skills ($p<0.05$), and vehicle safety skills ($p<0.001$), increased their knowledge of development and reported positive changes in terms of the

perceived harm of alcohol (p<0.001) and attitudes to underage drinking (p<0.05). The PY/PM programme did not have an impact on media literacy or on drinking and safety intentions. On the measures for which the programme demonstrated an impact, student's scores improved with increased exposure to the programme.

Padget and colleagues (2006; NRCT +) reported that the PY/PM programme had a small, but non-significant effect on drinking in the past 30 days at immediate post-test (mean difference -0.06; 95% CI -0.13, 0.01). The PY/PM intervention had significant positive effects on knowledge about the brain and alcohol (p<0.01); the perceived harm of and attitudes towards underage alcohol use (both p<0.05), and alcohol use intentions (p<0.01). In addition, the programme had significant effects on increasing vehicle safety skills (p<0.01) and reducing riding with a drinking driver (p<0.05). Effect sizes were calculated for these outcomes and are presented in Table 5.6.

Table 5.6. PY/PM: intervention effects (Padget et al., 2006; NRCT +)

Outcome	Intervention			Control			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Knowledge about brain and alcohol	3.74	0.35	283	3.38	0.55	151	0.84 (0.63, 1.04)
Perceived harm of underage alcohol use	3.00	0.77	283	2.72	0.75	151	0.37 (0.17, 0.57)
Alcohol intentions	2.40	0.58	283	2.35	0.58	151	0.09 (-0.11, 0.28)
Media literacy	3.44	0.50	283	3.22	0.54	151	0.43 (0.23, 0.63)
Vehicle safety skills	3.62	0.56	283	3.07	0.72	151	0.89 (0.68, 1.09)
Attitudes towards underage drinking	3.80	0.54	283	3.61	0.82	151	0.29 (0.09, 0.49)
Drank past 30 days	0.09	0.28	283	0.15	0.36	151	-0.19 (-0.39, 0.00)
Riding with a drinking driver	0.13	0.34	283	0.23	0.42	151	-0.27 (-0.47, -0.07)

5.2.3 Single session interventions

Four studies were identified that examined single session alcohol education interventions. Three studies examined videotaped presentations which focused on media literacy training (Austin & Johnson, 1995), normative education (Godbold, 1999) and expectancy modification (Kraus et al., 1994). Cruz and Dunn (2003) also examined an expectancy modification intervention but the session was based around a presentation, quiz and discussion. A summary of content for these single session interventions is presented in Table 5.7.

Table 5.7. Summary of programme content: Single session alcohol education interventions

Programme	Reference(s)	Programme components
Media literacy training	Austin & Johnson, 1995	• Media literacy training • One session of video, adverts, handouts and discussion • Session led by researcher
Normative education	Godbold, 1999	• Session delivered by teachers • Normative vs. information video • Immediate or delayed attack video
Expectancy modification	Cruz & Dunn, 2003	• Taught by researchers who developed the intervention • One-off session
	Kraus et al., 1994	• Two video interventions (expectancy based) • Control video intervention presenting facts concerning alcohol's harmful effects

5.2.3.1 Media literacy training

Austin and Johnson (1995) evaluated the effectiveness of a media literacy lesson for third grade students. The intervention was a one off session and aimed to enhance resistance skills towards media portrayals of alcohol. The session included a video that discussed techniques used by advertisers to sell products, a critique of alcohol advertising and discussion, and a handout.

Quality assessment

Evaluation of the media literacy lesson was based on an RCT Solomon group four design. A convenience sample of third grade students were randomised to the intervention or control condition and pre-test or no pre-test condition. The study methodology was not well reported and it was unclear how many students had been assigned to each condition and also if the groups were comparable at baseline. In addition only 44% of the original sample completed the follow-up three months later. The study was therefore rated '–' for internal consistency.

Findings

The media literacy lesson was evaluated in terms of its effects on children's perception of alcohol norms, alcohol portrayals in advertising, and alcohol-related behaviour (Austin & Johnson, 1995; RCT –). At immediate post-test, there were significant differences between treatment and non-treatment groups in understanding of persuasive intent ($p<0.001$), perceptions of realism ($p<0.001$), and perceptions of social norms for alcohol use ($p<0.01$), however at the three month follow-up, only perceptions of realism remained significant ($p<0.01$). Children who received the lesson were also less likely than control students to choose an alcohol-related toy[4], when offered the choice ($p<0.001$).

[4] Children were asked to view two toys that looked either like a can of fizzy drink or like a can of beer.

5.2.3.2 Normative education

Godbold (1999) conducted a test of inoculation theory applied to the context of adolescent alcohol use. Two groups of sixth grade students viewed a video which focused on the normative components of alcohol use and two groups viewed a video focusing on information related to alcohol use. Students also viewed an additional video based around two adverts for beer either at the time of the first video, or two weeks later, which were used to represent peer pressure to drink alcohol ('attack video').

Quality assessment

The evaluation was based on an RCT design with individual students randomised to one of six groups following pretesting. Further details of the methodology were not well reported, for example it was not clear how many students were allocated to each condition and therefore whether groups were comparable at baseline. The study was rated '–' for internal consistency.

Findings

At the first post-test, when all students had viewed the video but only half had viewed the additional 'attack' video, there was a significant difference between the normative (intervention) group and the information and control group ($p<0.05$) on the measure of peer acceptance of alcohol use (Godbold, 1999; RCT –). Students who viewed the normative messages had the lowest estimations of peer acceptance of alcohol use. At a second post-test, when all groups had viewed the 'attack' video there was no effect by message type on peer acceptance. In addition, there was no effect of message type on attitudes/behavioural intentions at either post-test.

5.2.3.3 Expectancy modification

Two studies examined expectancy modification interventions for fourth grade students (Cruz & Dunn, 2003; Kraus et al., 1994). Cruz and Dunn (2003) examined the impact of an expectancy challenge compared to traditional alcohol information. The expectancy modification intervention examined involved a presentation by one of the researchers, which examined students' beliefs about the effects of alcohol and why they thought people drank, and discussion regarding the pharmacological effects of excessive alcohol consumption. Students also participated in a quiz. Classrooms assigned to receive the traditional alcohol information intervention were given a presentation that emphasised the negative and harmful effects of alcohol consumption. The expectancy modification intervention examined by Kraus and colleagues (1994) was based on a 10-minute video presentation. One group viewed a tape based on an adult-model of expectancies and a second group viewed a tape featuring puppets (puppet-model expectancies). The control group received a facts only model.

Quality assessment

Both studies (Cruz & Dunn 2003; Kraus et al., 1994) used an RCT cluster design to examine the effects of the expectancy modification interventions. Cruz and Dunn (2003) did not report full details of the method of randomisation and the analyses only included participants who had completed both pre- and post-test measures. Follow-up measures were taken one week after intervention. Overall the internal consistency of the study was rated '–'. The study by Kraus and colleagues (1994) was adequately reported in terms of methodology, but it was not clear how many students were assigned to each group and therefore the study was rated '–' for internal consistency.

Findings

Cruz and Dunn (2003; RCT –) reported that the expectancy modification group exhibited the greatest amount of change in alcohol expectancies. Children participating in the expectancy modification intervention were less likely than the information only or control students to express positive or arousing expectancies at post-test (statistical significance not reported). Children who received the traditional alcohol information intervention were also less likely to express positive expectancies but this represented a smaller amount of change than occurred in the expectancy challenge group. Kraus and colleagues (1994; RCT –) found that children's alcohol expectancies were influenced by the intervention ($p<0.001$). The puppet-model video reduced expectancy endorsement but the adult-model video had the opposite effect and increased expectancy endorsement.

5.2.4 Summary and evidence statements

Thirteen primary studies were identified that examined alcohol education programmes, of which nine studies were evaluations of classroom-based curriculums and four studies were evaluations of single session interventions.

5.2.4.1 Knowledge and understanding

Impact on knowledge was examined for two programmes. The PY/PM programme was shown to have significant effects on knowledge about the effects of alcohol on development and the brain, vehicle safety and media literacy. This effect was demonstrated with third, fourth and fifth grade students (Bohman et al., 2004; RCT +; Bell et al., 2005a; RCT +, 2005b; CBA +) and students in first and second grade (Bell et al., 2007; RCT +). An alcohol awareness programme (Gamble & Burgess, 1994; UBA –) found some short term effects on knowledge related to alcohol awareness including the effects of alcohol on the body.

5.2.4.2 Attitudes and values

Impact on attitudes was examined for four single session interventions. Two studies that examined expectancy modification interventions (Cruz & Dunn, 2003; Kraus et al., 1994; both RCT −), one presentation-based the other video-based, both found that the interventions examined modified expectancies in the short term. A normative education approach delivered via video had positive effects on attitudes to alcohol at immediate post-test, but this finding was not maintained at follow up two weeks later. Media literacy training (Austin & Johnson, 1995; RCT −) had only very short term effects on children's perceptions of alcohol portrayals in advertising, children's perceptions of social norms or alcohol-related behaviours.

5.2.4.3 Personal and social skills

One study (Bell et al., 2000b; CBA +) reported that the PY/PM programme had significant effects on stress management and decision making for fourth and fifth grade students, but this finding was not replicated in other PY/PM studies of this, or younger, age groups.

5.2.4.4 Alcohol use and/or sexual health

The long term effects on alcohol use behaviours was examined for three programmes, AMPS (Shope et al., 1992; RCT −), AAPT (Donaldson et al., 1995; 2000; both RCT −) and PY/PM (Padget et al., 2006; NRCT +). None of these programme had consistent long term effects on alcohol use.

Evidence statement 2

2(a) There is moderate evidence from two RCTs, one NRCT and one CBA study[1] of a classroom-based programme to suggest that an intervention focused on alcohol prevention and vehicle safety can improve knowledge of the effects of alcohol on development and the brain, and vehicle safety in relation to drink driving. This evidence may only partially applicable to the UK because the programme's emphasis on the prevention of injury through drink driving is only partially relevant to PSHE delivery in primary schools focusing on SRE and alcohol education.

2(b) There is insufficient and inconsistent evidence from three RCTs and one NRCT[2] to determine the effects of alcohol education programmes on alcohol use in later years.

[1] Bohman et al., 2004 (RCT +); Bell et al., 2005b (CBA +); Padget et al., 2006 (NRCT +); Bell et al., 2007 (RCT +)

[2] Shope et al., 1992 (RCT -); Donaldson et al., 1995, 2000 (both RCT -); Padget et al., 2006 (NRCT +)

Table 5.8. Alcohol education: classroom-based programmes

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Gamble & Burgess, 1994 Alcohol awareness programme	UBA –	USA Mean 10.9 years N=65	PT	NR	No change in knowledge for some items; improvements of 50% or more on four items: the concept that alcohol is a drug, all alcoholic beverages have equivalent amounts of alcohol, the effects of alcohol on the body and that alcoholics can be anyone.
Shope et al., 1992 Alcohol Misuse Prevention Study (AMPS)	RCT –	USA 5th to 6th grade n= 5,356	26 months	72% followed up	Partial effectiveness demonstrated in subgroup of students with prior drinking experience. Intervention students scored higher on curriculum index.
Adolescent Alcohol Prevention Trial (AAPT)					
Donaldson et al., 1995	RCT –	USA 5th and 7th grade N= 11,995	PT at 1 year	80% completed the PT questionnaire	Resistance training delayed the onset of alcohol use, but only when adolescents believed it is not acceptable to drink
Donaldson et al., 2000	RCT –	USA 5th and 7th grade N= 11,995	8th, 9th and 10th grades	NR	Significant effect on alcohol use of normative education in public school students. Negative effects of resistance skills training. No effects seen in private school students.
Protecting You/Protecting Me					
Bohman et al., 2004	RCT +	USA 3rd – 5th grade N=321	PT, 5 weeks (intervention only)	81% at PT	Significant effect of the programme on media literacy, knowledge of brain development and vehicle safety. Also lower intentions to ride with an alcohol impaired driver. No effects on knowledge of brain importance, stress management, social skills or decision making.
Bell et al., 2005a	RCT +	USA 3rd – 5th grade N=717	PT, 6 weeks (intervention only)	85% completed study	Significant gains in media literacy and vehicle safety skills. No other significant changes in knowledge or attitudes to drinking.
Bell et al., 2005b (Teacher led)	CBA +	USA 4th – 5th grade N=848	PT, 12 months	85% completed the study	Significant impact on stress-management skills, decision-making skills, vehicle safety skills, perceived harm of alcohol, development and underage drinking attitudes. No effect on drinking and safety intentions or media literacy.
Padget et al., 2006 (Teacher or peer)	NRCT +	USA 5th grade N=493	PT	88% completed study	Small, but non-significant effect on past 30-day drinking. Significant positive effects on knowledge about the brain and alcohol; the perceived harm of and attitudes towards underage alcohol use, and alcohol use intentions. Also significant effects on increasing vehicle safety skills and reducing riding with a drinking driver.

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Bell et al., (2007)	RCT +	USA 1st – 2nd grade N=858	PT	87% completed study	Significant programme effects for one measure of knowledge about the brain, but not a second. Also for measures relating to vehicle safety, and media awareness, attitudes towards the harm of teenage drinking. No effect on attitudes towards drinking in non-driving teenagers, rules or decision making.

Table 5.9. Alcohol education: single session interventions

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Austin & Johnson, 1995 Media literacy training	RCT –	USA 3rd grade N=246	Immediate post-test; 3 months	44% completed 3 month follow up	Significant effect on persuasive intent, perceptions of realism, perceptions of social norms for alcohol use and predrinking behaviour at immediate post-test. However, at 3 months follow-up, only perceptions of realism remained significant.
Cruz & Dunn (2003) Expectancy modification intervention	RCT –	USA 4th grade N=216	1 week	87% completed the study	Intervention group exhibited the greatest amount of change in alcohol expectancies; less likely to express positive or arousing expectancies.
Godbold (1999) Normative education	RCT –	USA 11 years N=417	PT, 2 weeks	NR	Students who received the additional advert immediately after the initial advert showed significantly less favourable attitudes/behavioural intentions towards alcohol use at PT but only approaching significance at the 2 week follow-up.
Kraus et al., (1994) Expectancy modification intervention	RCT –	USA 2nd-4th grade N=292	PT, 4 weeks	92% completed study	Children's alcohol expectancies were influenced by the intervention; puppet-model video reduced expectancy endorsement but adult-model videos increased expectancy endorsement.

5.3 Drug education (including alcohol) programmes

5.3.1 Overview of evidence identified

A total of 32 primary studies were identified that examined drug education programmes that included a focus on illegal drugs (and tobacco) in addition to alcohol. A total of 20 studies reported on 18 classroom-based programmes, led by teachers (n=11 studies) or external contributors (n=9 studies). Four studies reported on programmes which combined in-school approaches with parent education and eight studies reported on a range of other in-school approaches including theatre in education and a programme based on a retreat format.

5.3.2 Classroom-based programmes led by teachers

Eleven studies examined nine drug education programmes led by teachers. Programme approaches examined included those based on life skills training (LST) in five studies (Botvin et al., 2003; Kreutter & Gewirtz, 1991; Bühler et al., 2008; Hurry & McGurk, 1997; Hurry et al., 2000) and science-based drug education in two studies (Holtz & Twombly, 2007; Sigelman et al., 2004). A summary of programme content is presented in Table 5.10.

Table 5.10. Programme content: Drug education programmes led by teachers

Programme	Reference(s)	Programme components
Tuning In To Health: Alcohol and Other Drug Decisions	Ambtman et al., 1990	• Curriculum covered drug effects, decision-making, alternatives to drug use, healthy lifestyle promotion • Length/intensity varied between schools
Life Skills Training	Botvin et al., 2003	• Main purpose of developing personal and social skills • 24 classes taught to elementary school children in grades 3 to 6.
	Kreutter & Gewirtz, 1991	• Botvin's life skills training • 18 sessions for grade 6 • Taught by external trainer
Allgemeine Lebenskompetenzen und Fertigkeiten	Bühler et al., 2008	• General life skills training • 12 lessons taught to fifth grade students
keepin' it REAL	Hecht et al., 2008	• Culturally grounded programme adapted for elementary school students • 2 lessons per week over 8 weeks • 30-45 minutes each lesson
Brain Power!	Holtz & Twombly, 2007	• Science-based drug education programme • Tailored programme of education on legal and illegal drugs for each age group • 1 lesson per week for 6 weeks
Project Charlie	Hurry & McGurk, 1997; Hurry et al., 2000	• Life skills curriculum • Weekly 30 minute lessons over 1 year
Million Dollar Machine	Schinke & Tepavac, 1995	• Knowledge and resistance skills training • 8 week programme • Assembly and classroom lessons
Drug and alcohol curriculum	Sigelman et al., 2004	• Science-based alcohol and drug curriculum • Audiotape curriculum delivery • 1 hour sessions on 3 consecutive days
Here's Looking at You 2000	Stevens et al., 1996	• No details reported

5.3.2.1 Tuning into Health

Ambtman and colleagues (1990) examined the Tuning into Health (TITH) programme, which targeted students in second to sixth grade and was aimed at reducing the future incidence of problems associated with drugs including alcohol. The programme focused on helping students to understand what drugs are, their effects on the body, the factors that influence people to use or not use drugs, alternatives to drug use and on using decision making as a way to deflect influences that promote drug use. The duration of the programme was not reported and the length and intensity of the units taught varied between schools.

Quality assessment

Evaluation of TITH was based on an NRCT design. Participation in the programme or control group was decided by the schools themselves, and within the pool of schools a random sample of classrooms were drawn for assessment. This resulted in a large number of participating students (n=2,406) and at post-test, 87% of the sample was retained. Overall the study was rated '+' for internal consistency.

Findings

Ambtman and colleagues (1990; NRCT +) examined the impact of the TITH programme on knowledge gains. Intervention schools improved more than control schools on knowledge of the essential elements of the programme, and there were significant differences between the intervention and control groups in urban schools in all grades ($p<0.01$ or better). In rural schools only grades 3,4 and 5 showed significant differences in effect of the programme on knowledge scores between the intervention and control groups ($p<0.01$ or better).

5.3.2.2 Life Skills Training (LST)

Three studies (Botvin et al., 2003; Bühler et al., 2008; Kreutter & Gewirtz, 1991) examined the effects of LST. Botvin's LST programme was originally designed to be delivered to students in the seventh grade with the main purpose of developing personal and social skills. Botvin and colleagues (2003) examined the effectiveness of LST with elementary school children in third to sixth grade. The intervention consisted of 24 classes taught over three years. The "Allgemeine Lebenskompetenzen und Fertigkeiten" (ALF) programme examined by Bühler and colleagues (2008) was based around general LST. The programme targeted fifth grade students and consisted of eight sessions on LST and four sessions on substance-related issues. Kreutter & Gewirtz (1991) examined the effects of Botvin's LST with a sample of sixth grade students.

Quality assessment

Botvin and colleagues (2003) used an RCT design to examine the effects of LST with elementary school students. The RCT was coded '-' because although the study appeared to

have been adequately conducted, 44% of participants were lost to follow-up at the post-test 3 months from baseline. The evaluation of the programme by Bühler and colleagues (2008) was based on an RCT design. Classrooms in participating schools were randomly assigned to intervention or control condition and to a pre-test or no pre-test condition (Solomon-four group design). Although the study methodology was well reported the follow-up evaluation was conducted at the end of the school year only (i.e. immediate post-test) and 30% of students were lost to follow-up. The study was rated '+' for internal consistency. Kreutter & Gewirtz (1991) based their evaluation on a CBA design and the comparison group was selected from a population "thought to be roughly equivalent" to the intervention group. Overall the study methodology was only briefly reported and it was therefore difficult to judge the internal validity of the design and it was rated 'CBA -'.

Findings

Following delivery of LST, results collected at post-test indicated that there were no differences between intervention and control students in terms of drinking frequency or the proportion drinking in the past year (Botvin et al., 2003; RCT –). However, analysis at the school level found that intervention schools had lower drinking prevalence compared to control schools, and this difference approached significance (p=0.054). LST students reported significantly more anti-drinking attitudes (p<0.05; also approached significance at the school level analyses, p=0.051) and increased substance use knowledge (p<0.05) relative to control students. Intervention students also reported lower normative expectations for peer alcohol use (p<0.001) as well as marginally higher levels of self-esteem (p=0.06; significant at the school level analyses, p<0.05) than control students. No significant differences were observed on the other measures reported (advertising knowledge, social skills knowledge, refusal skills knowledge, teen or adult drinking norms, and risk-taking). Effect sizes were calculated and are presented in Table 5.11

Table 5.11. LST: Intervention effects (Botvin et al., 2003; RCT –)

Outcomes	Intervention schools			Control schools			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Drinking frequency	0.436	0.038	9	0.520	0.037	11	-0.47 [-1.37, 0.42]
Drink in past year	0.134	0.007	9	0.178	0.007	11	-0.75 [-1.66, 0.17]
Anti-drinking attitudes	2.792	0.022	9	2.762	0.018	11	0.77 [-0.15, 1.69]
Substance use knowledge	5.327	0.245	9	5.280	0.218	11	0.14 [-0.74, 1.02]
Peer drink norms	1.292	0.073	9	1.418	0.069	11	-0.63 [-1.54, 0.28]
Teen drink norms	0.550	0.042	9	0.586	0.039	11	-0.20 [-1.09, 0.68]
Adult drink norms	1.595	0.042	9	1.625	0.038	11	-0.29 [-1.18, 0.60]
Risk-taking	1.716	0.046	9	1.764	0.043	11	-0.44 [-1.33, 0.46]
Self-esteem	2.678	0.043	9	2.593	0.037	11	1.06 [0.10, 2.01]

The ALF programme did not have any effects on the measure of 'alcohol abuse', which the authors classified as students who "reported any use beyond trying" (Bühler et al., 2008; RCT +). At baseline 13.1% of intervention students reported alcohol abuse compared to 10.4% of control students. At post-test, 10.8% and 10.5% of intervention and control students respectively, reported alcohol abuse (RR 1.01; 95% CI 0.59, 1.75). There were significant programme effects on knowledge about skilled behaviour and life skill resources, and students in the intervention group reported greater gains than control students on these measures ($p<0.001$). However, there were no programme effects on knowledge about unskilled behaviour and life skills deficits. On the measure of alcohol affinity, students in the intervention group reported a more critical view against alcohol consumption than students in the control group ($p<0.001$).

Table 5.12. ALF: Intervention effects (Bühler et al., 2008; RCT +)

Outcomes	Intervention schools			Control schools			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Alcohol affinity	1.98	0.74	256	1.81	0.7	192	0.23 (0.05, 0.42)
Knowledge skilled behaviour	0.93	0.16	256	0.88	0.21	192	0.27 (0.08, 0.46)
Knowledge unskilled behaviour	0.59	0.3	256	0.59	0.28	192	0.00 (-0.19, 0.19)
Resources	37.7	12.8	256	34.9	11.6	192	0.23 (0.04, 0.41)
Deficits	15.5	5.4	256	16	5.2	192	-0.09 (-0.28, 0.09)

Kreutter and Gewirtz (1991; CBA −) found that compared to the comparison group, intervention students reported a significantly greater gain in scores in terms of knowledge ($p<0.001$), self-concept ($p<0.01$) and passivity ($p<0.01$). However, there was no difference between the intervention and comparison group on the measure of locus of control.

5.3.2.3 Project Charlie

Two UK-based studies (Hurry et al., 2000; Hurry and McGurk, 1997) examined the effectiveness of Project Charlie, a 'life skills' drug education programme developed in the USA for primary school aged children. Children aged 9-10 years received the programme over one school year and were followed up three years later at the age of 14.

Quality assessment

The evaluation of Project Charlie (Hurry and McGurk, 1997; Hurry et al., 2000) appeared to have been adequately conducted and was coded 'RCT +'. However, there were few details reported about the method of randomisation and the number of students included in the evaluation was relatively small.

Findings

Following delivery of Project Charlie, Hurry and McGurk (1997; RCT +) found that there was no difference in lifetime alcohol use between intervention and control students (RR 0.80; 95% CI 0.46, 1.40). Three years later when participants were aged 14, Hurry and colleagues (2000; RCT +) again found that there was no difference between intervention and control groups in terms of their alcohol use (RR 1.02; 95% CI 0.72, 1.45). At immediate post-test, Hurry and McGurk (1997; RCT +) reported that Project Charlie students had significantly higher decision-making skills than control students ($p<0.05$). However, there were no significant differences between groups in terms of self-esteem, intention to drink alcohol or peer pressure. Three years later at age 14 (Hurry et al., 2000; RCT +), there were no differences between intervention and control students in terms of decision-making skills, peer pressure resistance or drug knowledge. However, children who received the Project Charlie programme expressed more negative attitudes towards drugs than control children ($p=0.05$). Effect sizes were calculated and are presented in Table 5.13 and Table 5.14.

Table 5.13. Project Charlie: Intervention effects – dichotomous (Hurry & McGurk, 1997; Hurry et al., 2000; RCT +)

Outcome	Intervention		Control		RR (95% CI)
	Events	Total	Events	Total	
Hurry & McGurk, 1997					
Lifetime alcohol use	17	65	18	55	0.80 (0.46, 1.40)
Intention to use alcohol	33	65	30	55	0.93 (0.66, 1.31)
Hurry et al., 2000					
Lifetime alcohol use	16	20	11	14	1.02 (0.72, 1.45)
Peer pressure resistance	15	20	7	14	1.50 (0.84, 2.68)

Table 5.14. Project Charlie: Intervention effects - continuous (Hurry & McGurk, 1997; Hurry et al., 2000; RCT +)

Outcomes	Intervention schools			Control schools			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Hurry & McGurk, 1997							
Knowledge of drugs	13.3	3.5	48	10.7	3.2	37	0.76 (0.32, 1.21)
Decision making skills	15.9	4.3	65	14.3	4.9	55	0.35 (-0.02, 0.71)
Hurry et al., 2000							
Knowledge of drugs	13.0	1.6	20	12.7	1.4	14	0.19 (-0.49, 0.88)
Attitudes towards drugs	3.8	0.4	20	3.5	0.4	14	0.76 (0.05, 1.47)
Decision making skills	18.7	4.0	20	21.1	3.5	14	-0.62 (-1.32, 0.08)

5.3.2.4 keepin it REAL

Hecht and colleagues (2008) examined the fifth grade version of the keepin it REAL programme, which was originally designed for seventh and eighth grade students. The fifth grade version included 12 sessions and was based on the same basic curriculum content as the standard seventh grade multicultural version, which focused on enhancing anti-drug expectancies, normative beliefs, and refusal self-efficacy, and facilitating the development of decision making and resistance skills.

Quality assessment

Hecht and colleagues (2008) used an RCT design to examine the effectiveness of the programme. Twenty-three schools were randomly assigned to the intervention or control condition. Overall the study was well reported but details were lacking regarding the method of randomisation and a fairly large proportion of the sample were lost to follow-up (28%). The study was rated '+'.

Findings

At the 12 month follow-up assessment, there were no differences in lifetime or recent subtance use between intervention and control students (Hecht et al., 2008; RCT +). In addition, there was no difference between intervention and control students in terms of refusal efficacy, use of active decision making or the likelihood of using hypothetical alcohol resistance strategies. However, compared to control students, students who received the intervention reported greater increases in the number of resistance strategies used ($p<0.001$). At the follow-up assessment, intervention students perceived that relatively more of his or her peers were using substances than control students ($p<0.001$). On the measures of student's subtance use intentions, parents' and friends' anti-drug injunctive norms, personal antidrug norms and substance use expectancies there was no difference between intervention and control groups.

5.3.2.5 Million Dollar Machine

One study (Schinke and Tepavac, 1995) examined the effectiveness of an 8-week substance abuse prevention curriculum, the Million Dollar Machine, which focused on knowledge and resistance skills training.

Quality assessment

The evaluation of the Million Dollar Machine (Schinke and Tepavac, 1995) used an NRCT design. The study methodology was not well reported and consequently the study was rated '–'. Although the authors reported that intervention and control students were well matched, they were not permitted to collect demographic details from study participants. It was

therefore not possible to judge whether participants were matched on factors such as age and sex.

Findings

Fourth grade students who participated in the Million Dollar Machine substance abuse prevention programme (Schinke & Tepavac, 1995; NRCT -) reported significantly less actual and potential time drinking compared to fourth graders in the control group ($p<0.05$).

5.3.2.6 Science-based drug education

Two studies (Sigelman et al., 2004; Holtz & Twombly, 2007) examined science-based drug education curriculums. Sigelman and colleagues (2004) examined two versions of a drug and alcohol curriculum for elementary school children explaining how substances affect behaviour and health, consisting of a causally coherent version and a less coherent version, compared to a disease control curriculum. The 'coherent' curriculum was designed to teach the elements of a scientific, brain-mediated theory of drug effects in a causally coherent sequence. The 'less coherent' curriculum included the same content as the coherent curriculum, but was reordered so that the consequences of drug use on health and behaviour were discussed before the drug's effects on the body and brain. Holtz and Twombly (2007) evaluated the effects of a science education curriculum (Brain Power!) on drug knowledge and attitudes. The curriculum involved a tailored programme of education on legal and illegal drugs for each age group targeted (fourth and fifth grade). The programme lasted for six weeks with one lesson delivered each week.

Quality assessment

Sigelman and colleagues (2004) randomly assigned participants to intervention or control groups. The study appeared to have been adequately conducted but few details were reported regarding the methods of randomisation or baseline comparability and the study was coded 'RCT +'. Brain Power! was evaluated using an NRCT design (Holtz & Twombly 2007). Students from two schools were assigned by classroom to the intervention or control group. Allocation to the intervention and control groups resulted in an imbalance between the two groups in terms of the racial and grade composition of the groups, although these were adjusted for in subsequent analyses. In addition, follow-up was limited to immediate post-test only and details of participants lost to follow up were not reported. The study was rated '–' for internal consistency.

Findings

Sigelman and colleagues (2004; RCT +) found that two drug and alcohol programmes explaining how substances affect behaviour and health had no significant effects on alcohol

use. There was no difference between intervention and control students in terms of alcohol use in the previous month at immediate post-test or 1-year follow-up. The programme also had no significant effects on attitudes to alcohol use or intentions to use alcohol. Holtz and Twombly (2007; NRCT –) examined the effects of the Brain Power! programme on knowledge. At post-test, the intervention group showed statistically significant greater improvements in knowledge about drugs compared to the control group ($p<0.01$). The authors did not examine the effects of the programme on other outcomes.

5.3.2.7 Here's Looking at You 2000

Stevens and colleagues (1996) reported on the New Hampshire Substance Abuse Prevention Study. Two approaches were examined in the study, a school curriculum for grades 1 to 12 (Here's Looking at You 2000) and a parent communication course combined with a community task force. Further information about the programme components and duration were not reported.

Quality assessment

The study was examined using a CBA design and the two intervention approaches were compared to a delayed intervention control. The study methodology was poorly reported and the study was consequently rated '-'.

Findings

There was no effect of the curriculum on the initiation of or drinking for students in grades 4-6 (Stevens et al., 1996; CBA -).

5.3.3 Classroom-based programmes led by external contributors

Nine studies examined seven drug education programmes led by external contributors. Three studies (Abbey et al., 1990; Witt & Witt, 1995; Hahn et al., 2007) examined the Beginning Alcohol and Addictions Basic Education Studies (BABES) programme which focused on psychosocial skills training for young children. The remaining six studies (Baker, 2004; Hall-Long & Dishop, 1999; Peterson & Woodward, 1993; Schinke et al., 2000; Welham, 2007; Wright, 2007) examined different approaches to drug education programmes delivered by a range of different types of external contributors. A summary of programme content is presented in Table 5.15.

Table 5.15. Programme content: Drug education programmes led by external contributors

Programme	Reference(s)	Programme components
BABES	Abbey et al., 1990; Witt & Witt, 1995	• Psychosocial skills training for young children • 1 lesson per week over 7 weeks; 1 hour per lesson • Taught by trained presenter/facilitator • Key components included storytelling, group discussion and role play
BABES Plus	Hahn et al., 2007	• 7 lessons (40–50 minutes) • BABES Plus included a parent-child interaction component • Taught by school counsellor
Preventing Alcohol and Drug Abuse Through Primary Education (PADAPE)	Baker, 2004	• Incorporated lessons from two programmes (Here's Looking At You and Get Real About Tobacco) • Taught by trained instructors • 6 lessons in second grade • 8 lessons in third to fifth grade
Drug education programme	Hall-Long & Dishop, 1999	• First and third grade drug education programme • Senior nursing students delivered the intervention • Two lessons per week over 8 weeks • Each session lasted 30-45 minutes
CHOICE programme	Peterson & Woodward, 1993	• Designed to teach children specific things they can learn to feel good, without using drugs or alcohol • Delivered by counsellors trained in the CHOICE programme • 1 lesson per week for 45 minutes over one semester
Curriculum for Native American students	Schinke et al., 2000	• Based on LST • Sessions incorporated cultural content • Community involvement component based on community mobilisation
Enrichment programme	Welham, 2007	• Planned curriculum for preschool to year 6 • Five themes: (1) knowledge of body and body functions ;(2) taking care of the body;(3) medicines and drugs;(4) identifying and dealing with danger; and (5) identifying and managing emotions. • Specialist 'visitors' delivered the programme
Drug At Work (DAW)	Wright, 2007	• Programme emphasised the indirect effects of drug use on non-users • 7 sessions in fifth grade • 1 follow up session in sixth grade • Taught by undergraduate students

5.3.3.1 Beginning Alcohol and Addictions Basic Education Studies (BABES)

Three studies examined the BABES programme, a social competency programme designed to teach young children about the consequences of alcohol and drug use. Two studies (Abbey et al., 1990; Witt & Witt, 1995) examined the effects of the programme with second grade students and one study (Hahn et al., 2007) examined an expanded version of the programme which incorporated a home-based component (BABES Plus) selected from a

population of elementary schools in which more than 40% of the students received free or reduced lunch.

Quality assessment

Abbey and colleagues (1990) evaluated the BABES programme using an RCT design. Three second grade classrooms from one school were randomly assigned to the intervention or control group. Overall the study was adequately reported and although the follow-up was only one month, a high proportion of the sample was followed up. The study was rated '+' for internal consistency. Witt & Witt (1995) evaluated the effect of the BABES programme on knowledge and attitudes using a UBA design. Due to the weak study design utilised and the poor reporting of methods the study was rated as 'UBA –'. Hahn and colleagues (2007) reported that a 'quasi-experimental design' was used to examine the effects of an expanded version of the BABES programme. Three schools, classified as high risk (>40% of students received a free or reduced price lunch), were selected and randomly assigned to one of three groups, BABES only, BABES Plus or control. Overall the study was well reported but because details were lacking regarding allocation concealment the study was rated 'NRCT +' for internal consistency.

Findings

Abbey and colleagues (1990; RCT +) found that at follow-up (one month after receiving the programme) the intervention group scored significantly higher than the control group on the knowledge test based directly on BABES material ($p<0.01$). However, there was no significant difference between groups on the knowledge test which applied BABES material to different situations. The intervention group reported significantly more negative attitudes towards the effects of alcohol than the control group ($p<0.05$). Effect sizes were calculated for these measures and are presented in Table 5.16. Abbey and colleagues (1990; RCT +) also examined the effects of the BABES programme on measures of coping, decision making, help seeking, peer pressure resistance, responsibility taking or self esteem, but there were no significant differences at post-test between the intervention and control groups on any of these measures. However, at follow-up, control group members demonstrated more active coping skills on one of the three coping scenarios than intervention students ($p<0.05$).

Table 5.16. BABES: Intervention effects (Abbey et al., 1990; RCT +)

Outcomes	Intervention schools			Control schools			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Attitudes about alcohol	0.31	0.16	31	0.23	0.22	24	0.42 (-0.12, 0.96)
Self-esteem	0.8	0.18	31	0.7	0.17	24	0.56 (0.02, 1.10)

Application of course material	14.52	3.62	31	14.24	3.52	24	0.08 (-0.46, 0.61)
BABES picture test	18.87	3.09	31	15.84	3.96	24	0.85 (0.30, 1.41)

Based on a UBA study, Witt & Witt (1995; UBA −) found that after receiving the BABES programme, students consistently scored higher at post-test on the concepts set in each of the lessons, indicating significant gains in knowledge (with the exception of knowledge relating to the lesson on self-image and feelings) (statistical significance not reported).

Hahn and colleagues (2007; NRCT +) examined the effects of an enhanced version of the BABES programme on child adjustment. Following intervention, parents whose children had received the BABES Plus programme rated their children as having less anxiety/withdrawal than did parents who children received the BABES only programme ($p<0.05$). Parents whose children received BABES Plus also rated their children as more socially competent than did parents whose children were assigned to BABES only group ($p<0.05$) or the control group ($p<0.05$). There was no difference between any of the group on the anger/aggression scale. Effect sizes were calculated and are presented in Table 5.17.

Table 5.17. BABES Plus: Intervention effects (Hahn et al., 2007; NRCT +)

Outcome	Comparison	Standardised mean difference (95% CI)
Home environment	BABES Plus vs. control	0.01 (-0.49, 0.51)
	BABES vs. control	-0.12 (-0.64, 0.40)
Parent depressive symptoms	BABES Plus vs. control	-0.31 (-0.81, 0.20)
	BABES vs. control	0.05 (-0.47, 0.56)
Parent involvement	BABES Plus vs. control	-0.19 (-0.69, 0.32)
	BABES vs. control	0.03 (-0.49, 0.54)
Anxiety/Withdrawal	BABES Plus vs. control	0.20 (-0.30, 0.70)
	BABES vs. control	-0.13 (-0.65, 0.38)
Social confidence	BABES Plus vs. control	0.06 (-0.44, 0.57)
	BABES vs. control	0.17 (-0.34, 0.69)
Aggression	BABES Plus vs. control	0.06 (-0.44, 0.57)
	BABES vs. control	0.17 (-0.35, 0.69)

5.3.3.2 Preventing Alcohol and Drug Abuse through Primary Education (PADAPE)

Baker (2004) evaluated the PADAPE programme which incorporated lessons from two other drug education programmes, the drugs and alcohol component of the programme was adapted from Here's Looking At You (HLAY) and the components that addressed tobacco were adapted from Get Real About Tobacco (GRAT). The content of the programme focused on knowledge about drugs, skills for refusing drugs and social skills. The PADAPE

programme consisted of six lessons in second grade, and eight lessons each in the third, fourth and fifth grades. Lessons were taught by educators trained to teach HLAY and GRAT.

Quality assessment

The study was conducted in two phases, phase one was based on a UBA design and phase two included a control group for comparison (CBA design). The study methodology was not well reported, it was not clear whether students who participated in the study were comparable and it was not clear how many students completed the study. Overall both phases of the study were rated '–' for internal consistency.

Findings

In the uncontrolled phase of the study the author noted that there were significant overall increases in performance from pre-test to post-test at all grades ($p<0.001$), and that these findings were maintained at follow up (Baker, 2004; CBA -). However, in second and fifth grade, the number of correct responses related to alcohol did not significantly improve. In the second phase of the study, which included a comparison group, students in second, third, and fourth grades who had not previously received the intervention programme performed better than students who had received the PADAPE programme, with the exception of one group. A comparison of fifth grade students revealed no significant differences between groups.

5.3.3.3 Hall-Long and Dishop's drug education programme

Hall-Long and Dishop (1999) conducted a pilot study of a first and third grade drug education programme, which was designed to increase knowledge about medicines, alcohol, tobacco and illegal drugs. The programme was taught by senior nursing students and consisted of two, 30-45 minute lessons each week over eight weeks.

Quality assessment

The study conducted by Hall-Long and Dishop (1999) was a pilot study, and the study methodology was based on an UBA design. In addition to lacking a control group for comparison, it was unclear how long students had been followed-up and the reliability of the outcomes measures used was not discussed. The study was rated '-' for internal consistency.

Findings

Hall-Long and Dishop (1999; UBA -) reported that there was an average increase in student's knowledge test scores by 30% compared to pre-test scores and increases on every area of knowledge examined.

5.3.3.4 CHOICE programme

Peterson and Woodward (1993) evaluated the CHOICE drug education programme for sixth grade students. This programme was designed to teach children alternative ways to feel good without using drugs or alcohol. The programme incorporated a video and cooperative learning techniques. Sessions were conducted once a week for 45 minutes over one school year.

Quality assessment

The study design was quasi-experimental but it was not reported how schools were assigned to the intervention and control groups. Other aspects of the methodology were also poorly reported and the study was rated '–' for internal consistency.

Findings

Peterson and Woodward (1993; NRCT -) examined the effects of the CHOICE programme on the self concept and locus of control. The authors reported that although a consistent trend in the direction of increased levels of self-concept and greater internal locus of control was found for the intervention school compared to the control school, the only marginally statistically significant difference was found on a self-concept semantic differential scale (p=0.05). That is, compared to students in the control group, students who received the CHOICE programme had a significantly higher self-concept as measured by the semantic differential.

5.3.3.5 Curriculum for Native American students

Schinke and colleagues (2000) examined a culturally tailored school-based substance abuse prevention programme for third, fourth and fifth grade Native American students. The school-based prevention programme was based on life skills training and incorporated Native American values, legends and stories. Students in one intervention arm also participated in a community involvement component that involved community activities and media programming.

Quality assessment

On the whole the study methodology used to evaluate the programme for Native American students was adequately reported (Schinke et al., 2000). However, details were lacking regarding the methods used to randomly assign schools between the intervention and control arms. The study was coded 'RCT +'.

Findings

Schinke and colleagues (2000; RCT +) found that significantly fewer Native American students who participated in the school curriculum only, and school curriculum plus

community groups reported alcohol consumption at 30- and 42-month follow-up compared to control ($p<0.01$). In addition, significantly fewer participants in the school curriculum only group reported alcohol use at 30- and 42- month follow-ups compared to both control and participants who received the school curriculum plus community components ($p<0.01$).

5.3.3.6 Drug education enrichment programme

Welham (2007) reported on a study of the efficacy of drugs education delivered to children aged 7 to 11 years (enrichment programme). The main component features of the programme were a comprehensive written curriculum and use of a mobile classroom. The programme was delivered by specialist external providers and the themes covered by the programme were: knowledge of body and body functions; taking care of the body; medicines and drugs; identifying and dealing with danger; and, identifying and managing emotions.

Quality assessment

Evaluation of the enrichment programme was based on an uncontrolled before and after study design and cross-sectional pre- and post-testing. Details of the study methodology were largely unreported and the study was therefore rated 'UBA –' for internal consistency.

Findings

Following delivery of the intervention, and with subsequent teacher support in-class, outcomes indicated that children's knowledge of how to stay healthy and the likely impact of drugs, alcohol and smoking on the maintenance of health and wellbeing had improved (statistical significance not reported). Welham (2007; UBA -) noted that pupils were overtly conscious of the likely future impact of older pupils on their ability to stay drug free on transferring to secondary school.

5.3.3.7 Drugs at Work (DAW)

Wright (2007) examined the effectiveness of a normative drug education programme, Drugs at Work, which emphasised the indirect impacts of drug use. Students participated in interactive, hands on activities, which included the DAW simulation exercise, media literacy training, and resistance skills training. The programme included seven sessions in fifth grade and one follow up session in sixth grade and was taught by undergraduate students.

Quality assessment

Evaluation of the DAW programme was based on a CBA design. However, the programme was implemented in comparison schools part way through the evaluation and both intervention and comparison schools also began implementing the DARE programme. The evaluation was therefore divided into three phases, for example in phase one, a quasi-experimental design was used to compare data from a baseline sample of sixth grade

students who did not receive the programme with students who received the programme in later years and their peers. Due to the complications in the study design the study was rated 'CBA –' for internal consistency.

Findings

Compared to baseline data collected in 1990, participants (or their classmates) who received DAW (1991-1992) were significantly more likely to have negative attitudes to drinking alcohol ($p<0.01$) and smoking ($p<0.01$), but not towards illegal drug use (Wright, 2007; CBA -). DAW participants (or their classmates) were significantly less likely to smoke ($p<0.01$), have been drunk ($p<0.05$) or used illicit drugs ($p<0.05$), and were significantly more likely to report having friends who would stop them from getting drunk ($p<0.01$). In an analysis of all seven years of data collected, the author reported results which indicated that the programme had less consistent effects on the use of alcohol than it did on smoking or illegal drug use.

5.3.4 Multicomponent programmes

Four studies (Rollin et al., 1992, 1995; Zavela et al., 1997, 2004) examined multicomponent programmes. Project KICK (Rollin et al., 1992; 1995) combined peer modelling for fifth grade students with a parent education component and Say Yes First (Zavela et al., 1997; 2004) included a curriculum combined with case management for high risk youth and a parent education programme. A summary of programme content is presented in Table 5.18.

Table 5.18. Programme content: Multicomponent drug education programmes

Programme	Reference(s)	Programme components
Project KICK	Rollin et al., 1992; 1995	• Peer modelling and parent education • Seventh grade peer leaders served as a 'buddy' for two twenty minute sessions each week • Delivered over two school years
Say Yes First	Zavela et al., 1997; 2004	• Multicomponent programme; universal curriculum and case management of high-risk youth • 5 year programme • Included parent education component

5.3.4.1 Project KICK

Two studies (Rollin et al., 1992; 1995) examined Project KICK which combined a peer modelling intervention with parent education. Seventh grade students from a middle school served as the positive peer models and taught drug awareness, drug refusal skills, and self-esteem building activities to groups of third grade students in two 20-minute sessions per week. Peer leaders were trained by KICK staff in two 20-minute sessions per week utilising role playing, lecture, discussion, video tape presentation, and small group activities. Parent sessions were held approximately once every two months, and included educational

seminars on behaviour management, stress management, parent/child communication, drug education and family management.

Quality assessment

Project KICK was evaluated using an RCT design; two classes within the same school were randomly assigned to the intervention or control group. Further details regarding the method of randomisation were not reported and allocation resulted in imbalances in the intervention and control groups, although these were adjusted for in subsequent analyses. No details were reported on the number of students followed up and follow-up time was inadequate. The study was rated 'RCT -' for internal consistency.

Findings

Rollin and colleagues (1992; 1995; RCT -) reported a significant effect of the intervention on scores on the Drug Knowledge Survey ($p<0.01$). Students who received the intervention had improved more than the control group on this measure by the second post-test (end of phase two). The intervention also had a significant effect on scores on the measures of life management, decision making and drug refusal skills, and self-concept (all $p<0.01$). Students in the intervention group had a greater improvement on these measures compared to the control group at the second post-test.

5.3.4.2 Say Yes First

Two studies (Zavela et al., 1997; 2004) examined the effectiveness of Say Yes First (SYF), which aimed to promote resiliency and protective factors in young people. The programme was implemented over five years, between grades four and eight. The intervention was educationally based but also employed case management techniques for high-risk youths and their families. The programme included parent education programmes, alternative youth and family activities, SYF councils and youth leadership training.

Quality assessment

Both studies of SYF used CBA designs and were given a 'CBA −' rating. This was because of poor reporting of key elements, a lack of equivalence between conditions at baseline, and the use of historical control in the study reported on by Zavela and colleagues (1997).

Findings

Zavela and colleagues (1997; CBA −) followed students who had participated in the SYF programme from the fourth to the eighth grade. They found that students who received the SYF programme reported lower prevalence of 'ever' use of alcohol than comparison students in the 1993-1994 and 1994-1995 cohorts ($p<0.05$). For past 30-day use of alcohol, students in the intervention cohort reported lower use than students in the 1994-1995

comparison cohort ($p<0.05$). Three year follow up data reported by Zavela and colleagues (2004) showed lower scores on measures of lifetime alcohol use, 30 day alcohol use and amount of alcohol use in SYF students compared to control students. However these differences were not significant.

5.3.5 Other in school approaches

Seven studies were identified that examined other in-school approaches to drug education. Two studies (Allison et al., 1990; Paxton et al., 1998) examined teachers training and support programmes. Five studies (Corbin et al., 1993; Hawthorne et al., 1995; Hawthorne, 1996; Tudor-Smith et al., 1995; Starkey & Orme, 2001) examined short term or single session interventions and one study (Raybuck & Hicks, 1994) examined an intervention delivered in a retreat format away from the classroom. A summary of programme content is presented in Table 5.19.

Table 5.19. Programme content: Other in-school drug education approaches

Programme	Reference(s)	Programme components
DAPPER	Allison et al., 1990	• Intensive staff development programme and in-service training • 5 sessions of 3 hours
Drug education programme	Paxton et al., 1998	• Half day of teacher training and support in drug education delivery • Programme delivered in 4 hourly periods, one per day over one week
Refusal skills intervention	Corbin et al., 1993	• Refusal skills training and rehearsal • Trained by Psychology Majors • Delivered over 3 days • Sessions lasted for 45 minutes per day
Life Education Centres	Hawthorne et al., 1995; Hawthorne, 1996	• Mobile Life Education Centre presentation • Preparatory and follow-up classroom work by classroom teachers
	Tudor-Smith et al., 1995	• 'Decisions' programme for 10-11 year olds • Substance use prevention and peer pressure resistance training • One-off lesson, lasting 30 mins-2 hours • Taught by trained educator
Theatre in Education	Starkey & Orme, 2001	• One day interactive drama production and workshop • Facilitated by actors with teaching/workshop experience
KIDS CARE	Raybuck & Hicks, 1994	• Retreat delivered away from classroom • Once every school year; half day for kindergarten – 2nd grade, and a full day for 3th – 6th grade • External facilitator

5.3.5.1 Teacher training and support

Two studies (Allison et al., 1990; Paxton et al., 1998) examined teachers training and support programmes. Allison and colleagues (1990) examined D.A.P.P.E.R., which was developed in the USA and largely based on knowledge and resistance skills training. The D.A.P.P.E.R. curriculum was developed from the Life Skills Training model and was

supported by provision of intensive staff development focusing on knowledge, attitudes and implementing skills and in-service training. The training schedule included five, three-hour sessions, and recipients were encouraged to hold one to two hour workshops in their school following training. One study examined this programme and compared students' drinking at the end of the school year in schools where teachers had received intensive D.A.P.P.E.R training compared to those that only received in-service training and those that received curriculum material but no staff development (Allison et al., 1990). Paxton and colleagues (1998) reported on a project conducted in Northumberland, UK that aimed to help teachers provide effective drug education through training and support. Eighteen schools participated in the project. Following assessment of the needs and concerns of year 5 pupils, their teachers and parents, a half day of teacher training was provided on methods of good practice. All teachers received training in first aid and theatre in education, in addition to choosing two other specific drug education topics (drug specific card game, alcohol module, photograph module, smoking, peer pressure, solvents, why use drugs, or cartoon modules). Teachers then delivered the programme in four hourly periods, one per day over one week and a parents evening was held.

Quality assessment

Allison and colleagues (1990) did not match the unit of allocation (school) and analysis (individual), and groups were not matched on their intentions to use alcohol in the future. Furthermore, there was little detail on curriculum implementation; this study was therefore given a rating of RCT −.The study conducted by Paxton and colleagues (1998) was largely descriptive and mostly focused on process evaluation. Although data were collected before and after programme delivery a control group was not utilised and the internal consistency of the study was rated 'UBA −'.

Findings

Allison and colleagues (1990; RCT −) reported that there were no differences between intervention students taught by teachers who were intensively trained or who received in-service training and control students, on any of the measures of alcohol use at post-test (lifetime use; drinking with parents; unsupervised drinking; intentions to drink), or on measures of alcohol related knowledge, problem solving, coping, and decision-making.

The only outcome of the programme examined by Paxton and colleagues (1998; UBA −) focused on seeking help or advice from appropriate individuals if they found or were offered a bag containing drugs. Following the drug education programme, more children said that they would take the drugs to the police ($p<0.001$) and more also said that they would take the drugs to their parents ($p<0.001$). Fewer children said they would throw them away

(p<0.001) or say no and run away (p<0.01). There was no significant change in the number of children who reported that they would give them to their mother or to 'Other'. Fewer pupils reported that they would intend to talk to the police if offered or found drugs (p<0.001), and more would intend to talk to their family (p<0.001), teacher (p<0.001) or friends (p<0.01). There was no significant change in the number that would talk to their mother.

5.3.5.2 Refusal skills intervention

Corbin and colleagues (1993) examined the impact of two intervention strategies on children's drug refusal skills and drug-related knowledge in third grade. Both intervention strategies (Rehearsal Plus [R+] and general information [GI]) taught children drug knowledge, assertiveness skills, decision making skills and specific drug refusal skills. However, students in the R+ group received an additional component that involved rehearsal of the behavioural training whilst students in the GI group were taught general knowledge. Training for both interventions was conducted over three days with 45 minutes per session per day.

Quality assessment

Effectiveness of the two treatment strategies was examined in an RCT. Children in one school were individually randomised to one of the two treatment strategies or a no intervention control. The sample size for the study was small, with a high rate of attrition (30%) and only students who completed the pre- and post-test were included in the analyses. The study was rated 'RCT –' for internal consistency.

Findings

Corbin and colleagues (1993; RCT –) examined the impact of the two intervention strategies on general knowledge scores. Participants' scores in the R+ group did not change between post-test and follow-up, but participant's scores in the GI group decreased (p<0.05). For drug knowledge, both the R+ and GI groups had higher means than the control group (p<0.001), but there was no difference between the two intervention groups. For the measure of rationale[5], the R+ group had higher post-test mean than the GI and control groups (p<0.001), although there was no difference between the GI and control groups. There were no differences between the intervention and control groups on the measure of assertiveness. However, students in the R+ group had higher mean scores on the measure of decision-making at post-test than the GI group and the control group (p<0.001; no significant difference between the GI group and the control group). There were no differences between the R+ and GI groups for the measure of refusal behaviours. However,

[5] Participants were asked to provide a brief rationale to justify their responses on the measure of drug knowledge e.g. when asked to differentiate between "good" and bad" drugs.

the group differences were significant between the R+ and GI groups when averaged across post-test and follow-up times, with the R+ group performing better. The R+ group showed significantly more refusal behaviours (in or out of sequence) than either the GI or control groups (p<0.001). There was no difference between GI and control groups. Effect sizes were calculated and are presented in Table 5.20.

Table 5.20. Refusal skills intervention: Intervention effects (Corbin et al., 1993; RCT –)

Outcome	Comparison	Standardised mean difference (95% CI)
Sequence behaviour	GI vs. control	0.01 (-0.65, 0.68)
	R+ vs. control	1.68 (0.96, 2.40)
Occurrence behaviour	GI vs. control	0.12 (-0.54, 0.79)
	R+ vs. control	1.71 (0.99, 2.44)
General knowledge	GI vs. control	1.10 (0.38, 1.82)
	R+ vs. control	-0.14 (-0.75, 0.48)
Drug knowledge	GI vs. control	1.11 (0.39, 1.83)
	R+ vs. control	1.70 (0.98, 2.43)
Decision making	GI vs. control	-0.26 (-0.93, 0.41)
	R+ vs. control	1.31 (0.62, 1.99)
Rationale	GI vs. control	-0.12 (-0.78, 0.55)
	R+ vs. control	1.24 (0.57, 1.92)
Assertiveness	GI vs. control	-0.11 (-0.78, 0.56)
	R+ vs. control	0.03 (-0.58, 0.65)

5.3.5.3 Life Education Centres

The Life Education programme evaluated by Hawthorne and colleagues (1995, 1996) consisted of three parts, preparatory classroom work, the Life Education presentation and follow-up work conducted by a classroom teacher. The Life Education presentation took place in a mobile classroom with an emphasis on learning how the body worked and identifying drug use pressures. Tudor-Smith and colleagues (1995) examined the short term impact of the Decisions programme of Life Education Centres (LECs) in Wales. Children were intended to receive one LEC programme per year in infant, primary and middle school. The Decisions programme targeted 10-11 year olds and using audio-visual aids, games, films, and role play taught children about substance use prevention and peer pressure resistance.

Quality assessment

Hawthorne and colleagues (1995) used a CBA design to examine the effects of the Life Education curriculum. The study compared students who had been exposed to the Life Education programme over five consecutive years with students not exposed to the programme but who had received conventional school-based drug education. Few details

about the study methodology were reported and it was therefore difficult to judge how well the study had been conducted. The study was consequently coded 'CBA -'. The design of the study by Tudor-Smith and colleagues (1995) was based on a UBA design and was rated '-' because of the weak design utilised.

Findings

Hawthorne and colleagues (1995; CBA -) found that students who received the Life Education programme were significantly more likely to report having drunk alcohol than non-Life Education students (OR 1.3; 95% CI 1.0, 1.6). The authors reported that these findings were largely due to boys who received Life Education being significantly more likely to have drunk alcohol than non-Life Education boys (OR 1.3; 95% CI 1.1, 2.1) as there was no difference between girls. There was no difference between students who had received the Life Education programme and those who had not in terms of drinking in the previous month. However, boys who received the Life Education programme were more likely to have drunk in the previous month than non-Life Education boys (OR 1.7; 95%CI 1.1, 2.4). Again, there was no difference between girls. Boys who received the Life Education programme were also significantly more likely than non-Life Education boys to report having drunk two or more drinks per occasion (OR 1.4; 95% CI 1.0, 1.9). This finding was significant across the whole group at the student level analysis but not the school level. Effect sizes are presented for the school-level analysis in Table 5.21.

Table 5.21. Life Education Centres: Intervention effects (school-level analysis) (Hawthorne 1995; CBA –)

Outcomes	OR (95% CI)
Lifetime alcohol use	
All students	1.30 (1.06, 1.60)
Boys	1.50 (1.07, 2.10)
Girls	1.10 (0.64, 1.90)
Past month alcohol use	
All students	1.20 (0.90, 1.60)
Boys	1.70 (1.20, 2.40)
Girls	1.10 (0.64, 1.90)
Alcohol misuse (2+ glasses)	
All students	1.20 (0.90, 1.60)
Boys	1.40 (1.03, 1.90)
Girls	1.10 (0.58, 2.10)

Tudor-Smith and colleagues (1995; UBA -) reported a significant improvement after two months in children's ability to recognise substances such as heroin, pharmaceuticals,

cigarettes, and alcoholic drinks as drugs ($p<0.05$). The majority of the children's beliefs about drugs did not change after two months, with the exception of views on advertising, perceptions of smokers and drinkers ($p<0.05$), with children becoming better informed on these matters. There were no statistically significant changes in substance use behaviours, although the authors reported that the proportions of students using alcohol and cigarettes had increased by follow-up (+4% and +9%, respectively, at the two-month follow-up). Furthermore, there was a statistically significant increase in the proportion of young people who reported that friends had smoked or drank alcohol ($p<0.05$).

5.3.5.4 KIDS CARE

Raybuck and Hicks (1994) examined the effects of the KIDS CARE programme that was designed to increase self esteem and reduce drug and alcohol use. The programme was administered in a retreat format away from the school, parents, and teachers. Children engaged in activities, discussions and games designed to teach concepts and skills. The modules were age appropriate and focused on developing prosocial ways of bonding and building self esteem. Classes engaged in informal follow-up activities and discussion following the retreat. The retreat was facilitated by an external facilitator and was repeated every school year between kindergarten and sixth grade. The retreat was a half day for students in kindergarten, first and second grade, and a full day for students in third, fourth, fifth and sixth grade.

Quality assessment

The study conducted by Raybuck and Hicks (1994) was observational, but included a comparison group from a school which had not implemented the KIDS CARE programme. The study methodology was not clearly reported and it was not clear, for example, how many students were in the intervention and comparison groups and whether they were balanced at baseline. The study was rated 'CBA -' for internal consistency.

Findings

Raybuck and Hicks (1994; CBA -) found that the intervention did not have significant effects on self-esteem on a standardised measure. However, on "Circle Words" (an adjective checklist self-esteem measure), children who participated in KIDS CARE had significantly improved scores on the positive scale compared to the comparison group ($p<0.01$), but there was no significant change on the negative scale. The retreat programme had a significant effect on the sociometric status of previously rejected or neglected children with high risk children in the intervention group more likely receive positive peer nominations (as children they like the most or whom they wish to spend more time with) than children in the comparison group.

5.3.5.5 Theatre in Education

Starkey and Orme (2001) conducted an evaluation of a primary school drug education drama project. The project involved an interactive drama production and workshop day for 10-11 year olds taught by actors with teaching or workshop experience.

Quality assessment

The impact of the drama project was assessed using a UBA design. The study was not well reported and was rated 'UBA -'.

Findings

Starkey and Orme (2001; UBA -) reported that significant increases were seen in children's ability to name specific drugs (e.g. cigarettes, alcohol, heroin) between pre- and post-test, increasing from 53% at pretest to 71% at post-test ($p<0.001$). The authors also reported a significant improvement in young people's response to seeking help when presented with a lost bag (potentially containing illegal drugs) with 9% saying that they would phone or tell the police ($p<0.05$ compared with pretest). Following participation in the programme, the children demonstrated change in their attitudes towards drugs with an increase in the percentage agreeing that some drugs could be good for you for medical reasons ($p<0.01$) and if you take the right amount ($p<0.01$).

5.3.6 Summary and evidence statements

A total of 32 primary studies examined drug education programmes that included a focus on illegal drugs in addition to alcohol. A range of programme approaches were identified; classroom-based programmes led by teachers or external contributors, programmes that combined in-school approaches with parent education, and other in-school approaches including theatre in education and a retreat-based programme.

5.3.6.1 Knowledge and understanding

The impact on knowledge and understanding was examined in 14 programmes, including nine classroom-based programmes led by teachers or external contributors, one multicomponent programme and four studies of other in-school approaches to drug education.

Participation in TITH in grades 2 to 6 was associated with improvements in knowledge related to the curriculum, although effects were more consistent in urban schools than rural schools (Ambtman et al., 1990; NRCT +). Four studies reported on the effects of life skills training on knowledge. Three studies reported that LST had an effect on knowledge at post-test (Botvin et al., 2003; RCT −; Bühler et al., 2008; RCT +; Kreutter & Gewirtz, 1991; CBA −). However, follow up of the students, who participated in Project Charlie, which was based

on the LST model, demonstrated that the intervention did not have long term effects on drug knowledge (Hurry et al., 2000; RCT +). Two studies (Abbey et al., 1990; RCT +; Witt & Witt, 1995; UBA −) that examined the BABES programme provided evidence that participation in the programme resulted in short term increases in knowledge relating to the curriculum, which focused on teaching young children about the consequences of drug and alcohol use. The results of the PADAPE programme (Baker, 2004; CBA −) were unclear; in phase one of the study participants reported increase in knowledge and skills, but in phase two students who had received the programme in the previous year reported worse outcomes than those who had not. A drug education programme for first and third grade students delivered by nursing students (Hall-Long & Dishop, 1999; UBA −) resulted in increases in knowledge across the curriculum areas of the programme. A UK study of an enrichment programme found that the intervention had a positive effect on children's knowledge (Welham, 2007; UBA −). Two science-based programmes (Sigelman et al., 2004; RCT +; Holtz & Twombly, 2007; NRCT −) were found to have improvements on knowledge about drugs immediately following curriculum delivery, but not in the longer term in one study (Sigelman et al., 2004; RCT +). Project KICK, a multicomponent programme that combined peer modelling for third grade students with parent education, had significant short term effects on drug knowledge (Rollin et al., 1992; 1995; RCT −).

One study (Allison et al., 1990; RCT −) that examined the effects of a teacher training intervention (intensive training vs. in-service training), D.A.P.P.E.R., found that the intensive intervention had no effects on students' knowledge in comparison to the in-service training approach. A second study that examined a project designed to support drug education delivery (Paxton et al., 1998; UBA −) reported that there were improvements in responses to seeking help with a lost bag. Following participation in a theatre in education programme (Starkey & Orme, 2001; UBA −), significant increases were seen in children's ability to name drugs, and in responses to seeking help with a lost bag of drugs. Children aged 10-11 years who participated in the 'Decisions' programme (Life Education Centres) also reported short term improvements in their ability to recognise substances (Tudor-Smith et al., 1995; UBA −).

5.3.6.2 Attitudes and values

Participants in the DAW programme (Wright, 2007; CBA −), which included interactive sessions, were more likely to have negative attitudes to alcohol. Botvin and colleagues (2003; RCT −) reported that LST had a significant effect on anti-drinking attitudes, and this finding was supported by the German study of LST by Bühler and colleagues (2008; RCT +). A science-based programme (Sigelman et al., 2004; RCT +) had no effects on attitudes or intentions towards alcohol. There were also no effects of the D.A.P.P.E.R. teacher training

programme on attitudes (Allison et al., 1990; RCT −) and The Decisions programme of the Life Education Centres was not found to have had any impact on substance-related beliefs (Tudor-Smith et al., 1995; UBA −).

5.3.6.3 Personal and social skills

There were no clear effects of the BABES programme on psychosocial skills. However, one study of the programme conducted with a high risk population (Hahn et al., 2007; NRCT +), which included an additional parent education component, had some impact on anxiety/withdrawal and social competence among children who received the enhanced intervention. Three studies examined the effects of LST for elementary students on personal and social skills. Botvin and colleagues (2003; RCT −) reported that the programme had effects on normative expectations and self esteem. A replication study by Kreutter & Gewirtz (1995; CBA −) also found that the programme had effects on self-esteem. There were also immediate effects of the LST-based Project Charlie on decision-making skills (Hurry & McGurk, 1997; RCT +), but not on self-esteem. Long term follow-up of the participants in Project Charlie found that the intervention did not have long term effects on personal or social skills (Hurry et al., 2000; RCT +). There were immediate effects of Project KICK (Rollin et al., 1992; 1995; RCT −) on participants' self esteem, decision making and refusal skills, with participants in the programme having improved outcomes on these measures. A rehearsal plus strategy that focused on rehearsal following refusal skills training had significant effects on refusal skills and decision making among participants. There were no effects of D.A.P.P.E.R., a teacher training programme on problem solving and coping (Allison et al., 1990; RCT −), and the results of the KIDS CARE programme, which although focused on improving self esteem provided no evidence of an intervention effect (Raybuck & Hicks, 1994; CBA −).

5.3.6.4 Alcohol use or sexual health

The longer term effects on alcohol use behaviours were examined for nine programmes. Positive effects were reported for two programmes, DAW and a curriculum for Native American students, and were inconsistent for two further programmes SYF and LST. One programme provided by the Australian Life Education Centre, had potentially negative effects on student's drinking in later years. No effects were reported for four programmes, keepin it REAL, Million Dollar Machine, a science-based programme, and a teacher training programme DAPPER.

The curriculum for Native American students (Schinke & Tepavac, 2000; RCT +) had long term effects on alcohol use, with students who participated in the programme less likely to report consuming alcohol, 30 and 42 months after receiving the programme. The effects of

the DAW programme were less robust, due to the weak study design employed (Wright, 2007; CBA −). However, compared to students in preceding years who did not receive the programme, DAW participants were less likely to have been drunk. However, overall the programme had a less consistent effect of the use of alcohol than tobacco or illegal drugs. The study of LST conducted by Botvin and colleagues (2003; RCT −) found that the intervention had effects on drinking frequency and drinking in the past year at post-test. However these findings were not replicated in a German study of LST (Bühler et al., 2008; RCT +) or in the evaluation of Project Charlie (Hurry & McGurk, 1997; Hurry et al., 2000; both RCT +). The effects of Say Yes First, a multicomponent programme that combined a universal curriculum with parent education and case management for high risk students, were also inconsistent (Zavela et al., 1997; 2004; CBA −). Alcohol use was found to be lower in eighth grade amongst students who had received the programme in fourth grade, but by the eleventh grade there were no significant difference between intervention and comparison students.

An evaluation of the Australian Life Education Centre curriculum (Hawthorne, 1995; CBA −) found that the curriculum had no short-term effects on alcohol use and had potentially increased alcohol use in boys who participated in the programme. One evaluation of the UK Life Education curriculum for 10-11 year olds (Decisions programme) found that the intervention had no effects on alcohol use (Tudor-Smith et al., 1995; UBA −).

Evidence statement 3

3(a) There is moderate evidence from one RCT[1] to suggest that a culturally tailored skills training intervention for Native American students may have long-term effects on alcohol use. However, this evidence is not applicable to the UK given the cultural specificity of this programme. There is insufficient and inconsistent evidence from four RCTs, four CBA studies and one UBA study[2] to determine the effects of other drug education approaches on alcohol use in later years.

1 Schinke et al., 2000 (RCT +)

2 Botvin et al., 2003 (RCT -); Bühler et al., 2008 (RCT +); Hurry & McGurk, 1997; Hurry et al., 2000 (both RCT+); Zavela et al., 1997, 2004 (both CBA -); Hawthorne, 1995 (CBA -); Wright 2007 (CBA -); Tudor-Smith et al., 1995 (UBA -)

Table 5.22. Drug (including alcohol) education: classroom-based programmes led by teachers

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Ambtman et al., 1990 Tuning In To Health: Alcohol and Other Drug Decisions	NRCT +	Canada 2nd – 6th grade N=2,406	Not clear	87% completed study	Intervention schools improved more than control schools on knowledge of essential elements of the programme.
Botvin et al., 2003 Life Skills Training	RCT -	USA 4th to 6th grade N= 1,954	PT	56%	Prevalence of drinking was significantly lower in intervention schools. Significant effects on attitudes (anti-drinking), knowledge, normative expectations and self-esteem. No effects on advertising knowledge, social skills knowledge, refusal skills knowledge, teen or adult drinking norms, and risk-taking.
Bühler et al., 2008 Allgemeine Lebenskompetenzen und Fertigkeiten	RCT +	Germany Mean 10.8 years N=643	PT	70% completed study	Significant programme effects on knowledge about skilled behaviour and life skill resources, but no programme effects were found concerning knowledge about unskilled behaviour and life skills deficits. Intervention students developed a more critical view against alcohol consumption, but intervention had no effects on alcohol use.
Hecht et al., 2008 keepin' it REAL	RCT +	USA Mean 10.4 years N=1,566	PT, 12 months	72% at 12 months	Intervention students reported greater increases in their quantity of resistance strategies but perceived that relatively more of his or her peers were using substances than control students. No difference in student's substance use intentions, parents' and friends' anti-drug injunctive norms, personal anti drug norms and substance use expectancies. No difference in lifetime or recent substance use.
Holtz & Twombly, 2007 Brain Power!	NRCT -	USA 4th and 5th grade N=112	PT	NR	Intervention group showed statistically significant improvements in knowledge about drugs.
Hurry & McGurk, 1997; Hurry et al., (2000) Project Charlie	RCT +	UK 10 years N= 120	PT, 3 years	77% at 3 years	No significant differences between intervention and control students in alcohol use at 13-14 years. Intervention students had significantly higher decision-making skills than control students at PT. No significant difference in self-esteem, intention to drink alcohol or peer pressure.
Kreutter & Gewirtz, 1991	CBA -	USA 6th grade N=216	PT	NR	Intervention students had greater gains in knowledge and on measures of self-esteem.
Schinke & Tepavac, 1995 Million Dollar Machine	NRCT -	USA 3rd- 6th grade N= 2,475	PT, 6 months	NR	Fourth grade students in the intervention group reported significantly less actual and potential time spent drinking.

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Sigelman et al., 2004 Drug and alcohol curriculum	RCT +	USA Grades 3-6 N= 327	PT, 1 year	82% completed the study	Significant intervention effect on knowledge at PT, but not 1 year. No difference between groups in attitudes or intentions. Programme did not have any significant effects on alcohol use.
Stevens et al., 1996 Here's Looking at You 2000	CBA -	USA 4th-6th grade N= NR	36 months	NR	No effects on initiation or drinking for students in 4-6 grades at baseline.

Table 5.23. Drug (including alcohol) education: classroom-based programmes led by external contributors

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Baker, 2004 Preventing Alcohol and Drug Abuse Through Primary Education (PADAPE)	CBA -	USA 2nd-5th grade N=1,521	1 year	NR	In phase one, significant overall increase in knowledge and skills at PT. In phase two, students who had not received the intervention programme in the previous year performed better than students who had received the PADAPE programme,
Hall-Long & Dishop, 1999 Drug education programme	UBA -	USA 1st and 3rd grade N=263	PT	NR	There was an average increase in knowledge test scores by 30% compared to pre-test scores and increases on every area of knowledge examined
Peterson & Woodward, 1993 CHOICE programme	NRCT -	USA 6th grade N=116	PT	NR	Compared to students in the control group, students who received the CHOICE programme had a significantly higher self-concept as measured by semantic differential.
Schinke et al., 2000 Curriculum for Native American students	RCT +	USA Mean 10.3 years N= 1,396	6, 18, 30 and 42 months	86% completed study	Significantly smaller percentage of participants in skills, and skills + community conditions reported alcohol consumption at 30 and 42 months. Fewer participants in the skills only condition reported alcohol use at 30 and 42 months (vs. control).
Welham, 2007 Enrichment programme	UBA -	UK Year 8 N=240	PT	NA	Intervention with subsequent teacher support in-class affected positively children's knowledge of how to stay healthy and the likely impact of drugs, alcohol and smoking on the maintenance of health and wellbeing.

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Wright, 2007 Drug At Work (DAW)	CBA -	USA 5th and 6th grade N=2,691	6th and 7th grade	NR	DAW participants (or their classmates) were significantly more likely to have negative attitudes to drinking alcohol, less likely to have been drunk and were significantly more likely to report havingfriends who would stop them from getting drunk.
Beginning Alcohol and Addictions Basic Education Studies (BABES)					
Abbey et al., 1990	RCT +	USA 6-8 years N=55	1 month	NR	Significant effects on knowledge based directly on BABES material but not on a knowledge test applying BABES material to different situations. Intervention group reported significantly more negative attitudes about alcohol's effects than the control group. No effects on measures of coping, decision making, help seeking, peer pressure resistance, responsibility taking or self esteem. However, control group members demonstrated more active coping skills on one of the three coping scenarios.
Hahn et al., 2007 BABES Plus	NRCT +	USA Mean 5.8 years N=126	1 and 6 months post-intervention	NR	BABES Plus parents rated their children as having less anxiety/withdrawal than did the BABES Only parents, and as more socially competent than did parents in both the BABES Only and control groups. For the Aggression scale, neither of the main effects nor their interaction was significant.
Witt &Witt 1995	UBA -	USA 7-9 years N=132	PT	NR	Significant gains in knowledge (with the exception of knowledge relating to the lesson on self-image and feelings)

Table 5.24. Drug (including alcohol) education: multicomponent programmes

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Rollin et al., 1992; 1995 Project KICK	RCT -	USA 3rd grade N=62	PT, 6-7 months	NR	Significant intervention effect on drug knowledge, and life management, decision making skills and refusal skills, and also self concept.
Say Yes First					
Zavela et al., 1997	CBA -	USA 4th grade N= 430	5 years	Not reported	Alcohol use lower than in preceding cohorts.
Zavela et al., 2004	CBA -	USA 4th grade N= 156	8 years	Not reported	No significant difference between intervention and control students. No difference in attitudes to school or drugs, ability to resist peer pressure, social competence, or school performance and attendance.

Table 5.25. Drug (including alcohol) education: other in-school approaches

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Allison et al., 1990 DAPPER	RCT -	Canada 5th grade N=266	End of school year	82% completed study	No difference between groups on any of the measures of alcohol use at PT, or on knowledge, problem solving, coping and attitudes, or decision making.
Corbin et al., 1993 Refusal skills intervention	RCT -	USA 8-10 years N=74	PT, 4 weeks (intervention only)	77% completed study	GI participants had higher general knowledge scores, both R+ and GI groups had higher drug knowledge than the control group at PT (no difference between two intervention groups). No differences on assertiveness refusal behaviours between intervention groups, but R+ intervention had effects on decision making skills and demonstrated more refusal behaviours.
Paxton et al., 1998 Drug education programme	UBA -	UK 9-10 years N=1,428	Not clear	NR	Following the teacher training and delivery, more children said that they would take the drugs to the police or to their parents. Fewer pupils reported that they would intend to talk to the police if offered or found drugs and more would intend to talk to their family, teacher or friends.
Raybuck & Hicks, 1994 KIDS CARE	CBA -	USA 3rd and 5th grade N=132	1-2 weeks	NR	No significant effect of intervention on self-esteem on standardised measures, intervention group significantly improved on the positive scale of the "Circle Words" measure of self-esteem compared to the control group (no significant change on the negative scale). Significant effect on the sociometric status of previously rejected or neglected children with high risk children in the intervention group more likely to receive positive peer nominations than control children.
Starkey & Orme, 2001 Theatre in Education	UBA -	UK 10-11 years N= 6 schools	4 weeks	85-98%	Significant increases were seen in children's ability to name specific drugs and response to seeking help when presented with a lost bag. Children also showed change in attitudes towards drugs with the realisation that some drugs could be good for you for medical reasons.
Life Education Centres					
Hawthorne et al., 1995; Hawthorne, 1996	CBA -	Australia Year 6 N= 3,019	PT	Not reported	Intervention had significant negative effects on alcohol use, particularly in boys. No preventive effects of the programme at the school or population level. Indication that programme was harmful.
Tudor-Smith et al., 1995	UBA -	UK 10-11 years N=509	1 week, 2 months	67% completed FU	Significant improvement after two months in ability to recognise substances such as: heroin, pharmaceuticals, cigarettes, and alcoholic drinks as drugs. The majority of beliefs about drugs did not change after two months and there was no statistically significant changes in substance use behaviours.

5.4 Sex and relationships education

5.4.1 Overview of evidence identified

Overall nine studies were identified that examined seven programmes, which focused on different approaches to SRE. Two programmes focused on abstinence approaches; three programmes were HIV/AIDS prevention approaches; one programme employed a parenting and care-giving approach; and another aimed to improve young people's sexual health knowledge, personal insight and motivation. All seven programmes were curriculum based and delivered in schools.

5.4.2 Abstinence-based programmes

Four studies were identified that examined two abstinence-based approaches to SRE. One study (Abel & Greco, 2008) examined the Family Action Model for Empowerment (FAME) and three studies (Denny et al., 1999; Denny & Young, 2006; Spear et al., 1997) examined the Sex Can Wait (SCW) Programme. A summary of programme content is presented in Table 5.26.

Table 5.26. Summary of programme content: abstinence-based programmes

Programme	Reference(s)	Programme content
FAME (Family Action Model for Empowerment)	Abel & Greco, 2008	• 8-week curriculum administered within the public school system • After-school programme continued for eight sessions; employed a psychoeducational model and art; music, dance, group activities, role-play, audiovisual aids and written materials.
Sex Can Wait	Denny et al., 1999; Denny & Young, 2006; Spear et al., 1997	• Curriculum series taught at upper elementary school, middle school and high school. • Teachers trained at a workshop over 3.5 days. • Delivered in 23 lessons over 5 weeks.

5.4.2.1 FAME (Family Action Model for Empowerment)

One study (Abel & Greco, 2008) evaluated an abstinence-orientated empowerment programme to prevent teenage pregnancy (FAME). This was a multi-dimensional school and community-based intervention which aimed to strengthen healthy family functioning and highlight sexual abstinence as a positive choice for young people. Delivered over an eight-week period, this programme focussed upon asset building, parent-teen communication and relationships, self-esteem, healthy relationships dealing with peer pressure and the benefits of valuing abstinence approaches.

Quality assessment

This study employed a UBA design and was given a UBA – rating. This rating reflected the poor study design and the limitations of the study findings as a result of immediate post-test results only and substantial levels of attrition (>20%).

Findings

Post-test results showed that the programme had significant positive effects on the following outcomes (all p<0.05): attitudes towards parents communication with their child or children, overall communication with parents, ability to resist peer pressure, self-esteem and perceived ability to abstain from sex (Abel & Greco, 2008; UBA –).

5.4.2.2 Sex Can Wait

Three studies reported on the Sex Can Wait (SCW) programme (Spear et al., 1997; Denny et al., 1999; Denny & Young, 2006). The SCW programme was an abstinence-based curriculum delivered across 23 lessons over a five week period, addressing self-esteem, reproductive anatomy and physiology, changes associated with puberty, values and decision-making skills. The programme included upper elementary, middle school and high school components, and only the results of the upper elementary curriculum are reported here.

Quality assessment

One study (Spear et al., 1997) of the SCW programmes was based on a CBA design, whilst the second study (Denny et al., 1999; Denny & Young, 2006) employed an NRCT design. Study quality was difficult to determine as the authors reported limited details of their methodology. Furthermore, as control and intervention students were located in the same schools there are concerns regarding contamination. In addition, there was either a high rate of attrition (Denny & Young, 2006) or attrition was not reported (Spear et al., 1997), and poor reporting of baseline comparisons. Both studies were rated as '–' for internal consistency.

Findings

Spear and colleagues (1997; CBA –) field tested the SCW programme and reported that at post-test, participants in the intervention group showed significantly higher knowledge scores (p<0.001), expressed more positive attitudes towards abstinence (p<0.01) and more desirable attitudes (p<0.05). However, no significant differences were found for parental communication factors or intent to remain abstinent.

Denny and colleagues (1999; NRCT –) also reported significant post-test differences between the intervention and control groups for knowledge scores (p<0.001), greater levels of self-efficacy (p<0.05), and attitudes towards abstinence (p<0.05). Intervention students were also more hopeful about the future than control students (p<0.05), although they showed no significant differences between pre- and post-test for sexual behaviour or abstinent intentions. At 18 months follow-up (Denny & Young, 2006; NRCT -), results showed that students in the intervention group had significantly higher knowledge scores than control students (p<0.05). There was no significant difference between the intervention

and control groups for self-efficacy, decision-making, attitudes, hopefulness, intention to remain abstinent (see Table 5.27). For two sexual behaviour outcomes, there was no significant difference between intervention and control students for whether they had ever had sexual intercourse (OR 0.59; 95% CI 0.21, 1.64), but students in the intervention groups were less likely than control students to report that they had had sexual intercourse in the past 30 days (OR 0.08; 95% CI 0.03, 0.23). Effect sizes were calculated and are presented in Table 5.27.

Table 5.27. SCW: Intervention effects at 18-month follow-up (Denny & Young, 2006; NRCT –)

Outcome	Intervention			Control			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Knowledge	62	15	158	50	15	38	0.80 (0.43, 1.16)
Attitude	3.49	0.51	158	3.47	0.59	38	0.04 (-0.32, 0.39)
Hopelessness	73	19	158	73	19	38	0.00 (-0.35, 0.35)
Self-efficacy	3.87	0.74	158	3.64	0.71	38	0.31 (-0.04, 0.67)
Decision making	3.33	0.51	155	3.34	0.51	37	-0.02 (-0.38,0.34)
Intention to remain abstinent	3.3	1.27	156	2.7	1.28	35	0.47 (0.10, 0.84)

5.4.3 AIDS education programmes

Three studies were identified that examined three AIDS education programmes (Gaskins et al., 2002; Pick et al., 2007; Schonfeld et al., 1995). A summary of programme content is presented in Table 5.28.

Table 5.28. Programme components: AIDS education programmes

Programme	Reference(s)	Programme content
An HIV/AIDS Awareness Education Programme	Gaskins et al., 2002	• Month-long curriculum-based education programme • 1-2 hours for kindergarten-1st grade students; 3-4 hours for 2nd-3rd grade students; 4-5 hours for 4th-5th grade students.
I Want to, I Can…Prevent HIV/AIDS	Pick et al., 2007	• Curriculum-based programme implemented over 15-20 weeks. • Teacher training workshops over 40 hours. • Incorporating colourful, interactive workbooks, group work, brain-storming, role-playing, storytelling, debating, discussions and audiovisual activities.
AIDS Education Programme	Schonfeld et al., 1995	• Programme delivered to kindergarten, 2nd grade and 4th grade students. • Six 45-60 minute lessons over a three week period. • Developmentally based programme that included demonstration, drawing exercises and interactive activities.

5.4.3.1 HIV/AIDS Awareness Education Programme

One study reported the results of an HIV/AIDS awareness education programme delivered to students from kindergarten to fifth grade (Gaskins et al., 2002). The programme was delivered in 1-5 hours over one month dependent upon the age of the target population. Sessions are delivered to students in the classroom and utilised art, puppets, films, books and lectures.

Quality assessment

Gaskins and colleagues (2002) used an UBA design to evaluate the effects of the programme. The lack of a control group limits the reliability of the study results. In addition, limited detail of the intervention was provided and only immediate post-test analysis was carried out. The study was assessed as 'UBA –' for internal consistency.

Findings

Post-test results from Gaskins and colleagues (2002; UBA –) for fourth and fifth grade students showed significant improvements in knowledge scores relating to HIV transmission, with a decline in only one question relating to HIV symptoms. Second and third grade students reported similarly significant improvements in knowledge scores ($p<0.001$), with all questions showing an increase in the percentage of correct responses post-test. In comparison, kindergarten and first grade students reported significantly lower knowledge scores at post-test ($p<0.001$). However, all grades showed significantly increased levels of comfort in proposed social scenarios with an HIV positive person ($p<0.001$).

5.4.3.2 I Want to, I Can… Prevent HIV/AIDS

Pick and colleagues (2007) reported on an HIV prevention programme I Want to, I Can…Prevent HIV/AIDS, a life skills programme which was designed to promote communication as a protective factor against high-risk sexual behaviour. This study incorporated a variety of creative classroom strategies (e.g. storytelling, role-playing) with fourth grade students over a 15 to 20 week period throughout the school year.

Quality Assessment

The study by Pick and colleagues (2007) was based on an RCT cluster design and appeared to have been well designed; however the method of allocation to intervention and control groups was not explained. Other aspects of the study were well reported; the authors reported controlling for baseline measures and provided further details to show that there was no contamination between groups. The study was coded as 'RCT +'.

Findings

Pick and colleagues (2007; RCT +) reported significant post-test results in the intervention group for improved attitude towards communication ($p<0.001$), improved scores for self-efficacy ($p<0.001$), intentions regarding communication ($p<0.001$), communication behaviour ($p<0.001$), and perceived norms about communication ($p<0.001$). At post-test the intervention group was also more likely to discuss behaviours on taboo ($p<0.001$), romantic ($p<0.001$) and threatening or unpleasant topics ($p<0.05$). Girls were more likely than boys to report positive attitudes, self-efficacy and intentions towards discussing difficult topics. However, boys were significantly more likely to discuss threatening or unpleasant topics ($p<0.001$).

5.4.3.3 AIDS Education Programme

Schonfeld and colleagues (1995) reported on an AIDS education programme delivered to kindergarten, second grade and fourth grade students over a three-week period. This developmentally based education programme aimed to teach children to differentiate between communicable and non-communicable illnesses with specific reference to HIV/AIDS.

Quality Assessment

This study by Schonfeld and colleagues (1995) employed an appropriate methodology with study population being representative of the eligible population, there were no significant differences at baseline between the intervention and control groups, and researchers were blind to the control/treatment condition during testing and analysis. However although allocation was reported as randomised, the authors provided limited information about the allocation of classrooms to the intervention and control groups, hence this study was assessed as 'RCT +' for internal consistency.

Findings

Results of the study by Schonfeld and colleagues (1995; RCT +) showed that at two and a half months follow-up, the intervention group had significantly higher scores for knowledge of the following: causality and prevention of AIDS ($p<0.001$); the causality and prevention of colds ($p<0.01$); and causality of cancer ($p<0.05$). However, there was no difference between groups for knowledge of cancer prevention at follow-up. Students in the intervention group mentioned significantly more accurate causes of HIV/AIDS (e.g. sexual transmission, blood transmission, mother-to child transmission). However, significantly fewer children in the intervention group mentioned injecting drug use as a route of HIV/AIDS transmission ($p<0.01$). Overall, the intervention was equally effective across all grades.

5.4.4 Other in-school approaches

Two studies (Masterpasqua et al., 1992; Wackett & Evans, 2000) were identified that examined other approaches to SRE. Masterpasqua and colleagues (1992) examined a parenting programme for fifth and sixth grade students and Wackett and Evans (2000) examined an intervention designed to improve young people's sexual health knowledge, motivation, personal insight and skills. A summary of programme content is presented in Table 5.29.

Table 5.29. Programme components: other in-school approaches

Programme	Reference(s)	Programme content
Learning about Parenting/Learning to Care	Masterpasqua et al., 1992	• Two cohorts of 5th-6th graders received the programme over two years. • The programme focussed on developmental milestones, individual differences, and parental care for children.
Choices and Changes	Wackett & Evans, 2000	• Programme aims to improve sexual health knowledge, motivation and personal insight and skills. • Delivered in eight 1 hour sessions over four weeks.

5.4.4.1 Learning about Parenting/Learning to Care

One study (Masterpasqua et al., 1992) reported findings from the school-based Parenting and Care-giving programme, which was aimed at improving children's understanding of care in order to prevent the long-term impact of negative early childrearing experiences. The authors reported on data from two cohorts of fifth and six grade students.

Quality Assessment

Masterpasqua and colleagues (1992) failed to report details of how classrooms were allocated to intervention or control groups. They also did not provide sufficient information about baseline measurements, pre-test results or follow up times. Therefore, this study was coded as a 'NRCT −'.

Findings

The post-test results from year one (without pre-test results) showed a significant increase in the number of parenting ($p<0.01$) and nurturing solutions ($p<0.05$) that intervention students were able to provide to common parent-child problems, compared to control (Masterpasqua et al., 1992; NRCT −). However, there was no difference between intervention and control groups in parenting knowledge or the number of physically punishing solutions provided. The results for year two (where pre-test results were also available) showed that intervention students had significant increases in parenting knowledge ($p<0.001$) and in the number of total and caring solutions provided in response to parent-child problems ($p<0.001$ and $p<0.01$, respectively), compared to control students. Intervention students also reported a

reduction in the number of physically punishing solutions (p<0.001), compared to the control group. Effect sizes were calculated for these outcomes and are presented in Table 5.30.

Table 5.30. Learning about Parenting: Intervention effects (Masterpasqua et al., 1992; NRCT –)

Outcome	Intervention			Control			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Year 1							
Parenting knowledge	33.99	3.73	67	33.05	4.17	71	0.24 (-0.10, 0.57)
Total solutions	18.91	2.85	67	17.29	3.17	71	0.53 (0.19, 0.87)
Care solutions	5.2	1.81	67	4.43	1.87	71	0.42 (0.08, 0.75)
Punishing solutions	0.52	0.56	67	0.59	0.84	71	-0.10 (-0.43, 0.24)
Year 2							
Parenting knowledge	34.59	3.63	108	32.97	4.08	109	0.42 (0.15, 0.69)
Total solutions	18.85	3.43	108	17.52	3.53	109	0.38 (0.11, 0.65)
Care solutions	5.59	1.8	108	5.03	1.82	109	0.31 (0.04, 0.58)
Punishing solutions	0.8	0.7	108	0.91	0.88	109	-0.14 (-0.40, 0.13)

5.4.4.2 Choices and Changes programme

One study (Wackett & Evans, 2000) examined the effects of the Choices and Changes programme, which aimed to improve young people's sexual health knowledge, motivation, personal insight and skills.

Quality Assessment

Wackett and Evans (2000) used a UBA design to examine the effects of the Choices and Changes programme. The authors reported limited information on the intervention and control groups, and no details of baseline measurements were reported. Overall the design of the study was limited and was assessed as a 'UBA –' for internal consistency.

Findings

Few analyses were conducted on the data, however proportions responding positively to the intervention were tabulated and pooled results examined (Wackett & Evans, 2000; UBA –). Findings showed that participants' responses for assertiveness skills were high at pre-test (70.9%) and remained similar at follow-up (between 70.7% and 66.3%). Views of supporting environments (43.8%) improved slightly at post-test and follow-up times (47.2%, 50.0% and 56.3% respectively). Pooled results showed an improvement in knowledge regarding, for example, fertility and anatomy (from 58.8% pre-test to 65.6% at final follow-up). Similarly, young people showed stronger positive views regarding the importance of the life programme for themselves (from 69.9% to 77.4%) and their peers (from 68.4% to 77.1%).

Participants also reported stronger positive views on the importance of setting boundaries (from 78.7% to 88.2%); the influence of the media on young people's body image and sporting performance (from 44.8% to 51.2%); and (limited to grade 7 only) their views that it is important for young people to discuss and set sexual limits when dating (from 52.2% to 69.8%). Further results indicated a small decrease in self efficacy at final follow-up (from 70.9% to 66.3%).

5.4.5 Summary and evidence statements

A total of seven programmes were identified that examined primary school-based sex and relationship interventions. The programmes identified included a variety of intervention approaches including abstinence-based approaches, HIV/AIDS prevention, parenting and care-giving, and sexual health education.

5.4.5.1 Knowledge and understanding

Five programmes reported on the impact on participants' knowledge and understanding. Young people participating in the SCW programme (Spear et al., 1997; CBA −; Denny et al., 1999; Denny & Young, 2006; both NRCT −) reported improved knowledge relating to the abstinence-based curriculum at immediate post-test and at 18 months follow-up. Two HIV prevention programmes (Gaskins et al., 2002; UBA −; Schonfeld et al., 1995; RCT +) reported improvements in knowledge acquisition, however the findings of the study carried out by Gaskins and colleagues (2002; UBA −) were inconsistent and insufficient to evaluate in light of the poor quality of the study. Masterpasqua and colleagues (1992; NRCT −) reported improvements in the intervention group for parenting knowledge, whilst Wackett & Evans (2000; UBA −) reported marginal improvements in sexual health knowledge. However, both these studies were poorly designed.

5.4.5.2 Attitudes and values

Overall, four programmes reported outcomes relating to attitudes and values. In a programme designed to prevent teenage pregnancy (Abel & Greco, 2008; UBA −), participants reported an increase in feelings that they mattered to their parents, and increased self-efficacy and behavioural intentions towards abstinence. Participants in the SCW programme reported no difference in attitudes or values at post-test (Spear et al., 1997; CBA −; Denny et al., 1999; NRCT −) or at follow-up (Denny & Young, 2006; NRCT −). Pick and colleagues (2007; NRCT +) reported that the effects of their programme resulted in improved attitudes towards communication at one year follow-up. Wackett and Evans, (2000; UBA −) showed that participants reported increased attitudes and values on the importance of the programme, views of the media and communicating about sex. These results were maintained at follow-up.

5.4.5.3 Personal and social skills

Personal and social skills outcomes were reported in five programmes. Participants in the FAME programme (Abel & Greco, 2008; UBA −) reported significant increases in personal and social skills including improved communication with their parents. Gaskins and colleagues (2002; UBA −) reported that participants in an HIV/AIDS awareness education programme showed significant increases in perceived ease of socialising with HIV positive people. Pooled results from the Choices and Changes programme (Wackett & Evans, 2000; UBA −) showed no difference in assertiveness skills at follow-up. Participants in the SCW programme reported greater levels of self-efficacy, but no difference in levels of decision-making at follow-up (Denny et al., 1999; Denny & Young, 2006; both NRCT −). Pick and colleagues (2007; RCT +) reported that the effects of their programme resulted in increased communication with parents at one year follow-up.

5.4.5.4 Health and social outcomes related to alcohol and sexual health

Health and social outcomes were examined for the SCW programme (Denny et al., 1999; Denny & Young, 2006; both NRCT −). Findings showed that there was no difference between the intervention and control groups for behavioural intentions. However, at 18 months follow-up, the intervention group was less likely to report sexual activity in the past 30 days in comparison with the control group (Denny & Young, 2006; NRCT −).

Evidence statement 4

4(a) There is weak evidence from two NRCTs[1] to suggest that an abstinence education programme that targeted children aged 10-12 years can improve sexual health knowledge, but the long term impact on sexual behaviours is less clear. This evidence may be directly applicable to PSHE delivery in primary schools focusing on SRE and alcohol education because the curriculum topic and content of this programme are relevant.

4(b) There is moderate evidence from one RCT[2] to suggest that SRE programmes targeting communication, such as I Want to, I Can…Prevent HIV/AIDS, can improve parent and child communication about sexual health. This evidence may be directly applicable to the UK because the curriculum topic and content of these programmes are relevant to PSHE delivery in primary schools focusing on SRE and alcohol education.

4(c) There is inconsistent and insufficient evidence from two NRCTs, one CBA study and two UBA studies[3] to determine the effectiveness of SRE programmes on attitudes and values relating to sexual health.

1 Denny et al., 1999; Denny and Young 2006 (both NRCT -)

2 Pick et al., 2007 (RCT +)

3 Abel and Greco 2008 (UBA -); Spear et al., 1997 (CBA -); Denny et al., 1999; Denny and Young 2006 (both NRCT -); Wackett and Evans 2000 (UBA -)

Table 5.31. Sex and relationships education: Abstinence-based programmes

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Abel & Greco, 2008 FAME (Family Action Model for Empowerment)	UBA −	USA 5th-9th grade N=123 (intervention)	PT	>20% loss to follow-up	Significant changes in attitudes at PT.
Sex Can Wait					
Spear et al., 1997	CBA −	USA 5th-6th grade N=287	PT	Not reported	Intervention group had significantly higher knowledge scores, attitudes towards abstinence and more life skill factors.
Denny et al., 1999	NRCT −	USA 5th-6th grade N=301	PT	Not reported	The intervention group reported significantly higher knowledge scores, desirable attitudes and attitudes towards abstinence.
Denny et al., 2006	NRCT −	USA 5th-6th grade N=376	18 months	196 (52%) at 18 month follow up	Intervention students had significantly higher knowledge scores than control students, and were significantly less likely to have had sexual intercourse in the past 30 days. No significant difference between groups for self-efficacy, decision-making, attitudes, hopefulness, or behavioural outcomes: intention to remain abstinent, or whether ever had sexual intercourse.

Table 5.32. Sex and relationships education: AIDS/HIV education programmes

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Gaskins et al., 2002 An HIV/AIDS Awareness Education Programme	UBA −	USA Kindergarten-5th grade N=339	PT	358 (one class was not available at pre-test)	Kindergarten and 1st grade students reported a significant decrease in knowledge scores, but, 2nd-5th grade students reported significant increases. Increased reports of perceived comfort at being around an HIV positive person for all grades.
Pick et al., 2007 I Want to, I Can….Prevent HIV/AIDS	RCT +	Mexico 4th grade N=1581	1 year	Only those completing pre- and post-test were reported	Intervention group showed significant improvements in communication attitudes, self-efficacy, intentions, behaviour, and perceived socio-cultural norms relating to communication. At PT the intervention group were also more likely to discuss behaviours on taboo, romantic and unpleasant topics.

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Schonfeld et al., 1995 AIDS Education Programme	RCT +	USA Kindergarten-6th grade N=189	2.5 months	166 (88%)	Intervention group had significantly higher scores for the causality and prevention of AIDS and colds and causality of cancer, and mentioned significantly more correct causes of AIDS. No difference in knowledge of cancer prevention was identified after the intervention.

Table 5.33. Sex and relationships education: Other in-school approaches

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Masterpasqua et al., 1992 Learning about Parenting/Learning to Care	NRCT −	USA 5th-6th grade N= 217	PT	Not reported	Significant improvements in the intervention group's parenting knowledge, including the number of total solutions and positive solutions to parent-child problems they were able to provide in comparison to the control group.
Wackett & Evans, 2000 Choices and Changes	UBA −	Canada 4th-7th grade N=938	PT, 1 and 3-4 months	10-15% loss to follow-up	Increases in sexual health knowledge, but no change in assertiveness skills or supportive environments. The importance of when dating students to discuss sexual limits at the outset of a relationship reported a high response at follow-up.

5.5 General health education programmes

5.5.1 Overview of evidence identified

Three studies (Andrews, 1992; Utley et al., 2001; Young et al., 1997) were identified that examined general health education programmes which included modules or topics related to alcohol education or SRE.

Table 5.34. Programme components: General health education programmes

Programme	Reference(s)	Programme components
Growing Healthy Curriculum	Andrews, 1992	• School health curriculum for kindergarten to sixth grade • Length/intensity not reported • Delivered by teachers
Peer tutoring	Utley et al., 2001	• Health education curriculum based on peer tutoring programme for students with developmental disabilities • 3 sessions a week for 3 weeks • Taught by teachers and peers
Contemporary Health Series	Young et al., 1997	• Life skills modules from a health education curriculum • 16 modules in total; 3 compulsory life skills modules and 13 optional modules • Taught by teachers and counsellors

5.5.2 General health education programmes

5.5.2.1 Growing Healthy Curriculum

Andrews (1992) examined the impact of the Growing Healthy Curriculum. The programme focused on improving students' attitudes towards good health practices and behaviour. The programme was delivered in kindergarten to sixth grade but no further details about the programme were reported.

Quality assessment

Although a control group was utilised in the evaluation of the Growing Healthy Curriculum (Andrews, 1992), the study methodology was poorly reported. There were few details describing the intervention and the number of participants in the study was not reported although it was reported that the study included students from five school districts. Overall the study was rated 'CBA –' for internal consistency.

Findings

There was little evidence to suggest that the Growing Healthy Curriculum programme (Andrews, 1992; CBA –) had an impact on attitudes to drinking, although students who received the programme from kindergarten to sixth grade were significantly less likely to think they would drink as adults in the fifth and ninth grades ($p<0.05$). There were no differences between groups for the percentage of students who had tried alcohol. However,

students who received the Growing Healthy curriculum from kindergarten to sixth grade were significantly more likely to drink on a regular basis in third, fifth, sixth and ninth grades ($p < 0.05$) than control students.

5.5.2.2 Peer tutoring for students with developmental disabilities

Utley and colleagues (2001) examined the effectiveness of class wide peer tutoring (CWPT) in a health education curriculum for children aged 7-9 years with developmental disabilities. Further information was not reported about the nature of the students' disabilities but intelligence test scores in the sample ranged from 52 to 57. The units of the curriculum covered the following topics: body parts and their functions; poisons; drugs and their effects; and dangerous situations. Prior to implementation, students and teachers participated in training sessions for CWPT, after which, CWPT was delivered for 30-minutes for three days per week. After five weeks, peer tutoring was withdrawn for two weeks and traditional teaching methods used followed by three more weeks of peer tutoring.

Quality assessment

The study by Utley and colleagues (2001) was the only study identified in the literature searches that conducted research in a sample with disabilities. Disability research has historically relied on small samples and uncontrolled designs. Researchers may face difficulties in finding research participants and it may not be possible to find an adequately matched comparison groups (Odom et al., 2007). However this study was based on a particularly small sample size and consequently tests of significance were not reported. The authors described the study as 'a BAB reversal design' (i.e. intervention was delivered [B], then withdrawn [A], and then reinstated [B]), and a control group was not used for comparison, rather students' outcomes were compared over the period when CWPT was and was not in place. The study was rated 'UBA –' for internal consistency.

Findings

Utley and colleagues (2001; UBA -) reported that students had an increase in knowledge on all of the areas covered by the curriculum.

5.5.2.3 Contemporary Health Series

Young and colleagues (1997) examined the effects of selected modules from the Contemporary Health Series for sixth grade students, which consisted of 16 modules focusing on health and life skills. Following training, teachers implemented three life skills modules which focused on skills development (the remaining 13 modules were optional).

Quality assessment

The design of the study used to evaluate the Contemporary Health Series (Young et al., 1997) was not clearly described but was judged to be a CBA, as allocation to intervention and control groups was not described as experimental. As the study methodology was poorly reported the study was rated '–' for internal consistency.

Findings

Compared with the control group, students who received the Contemporary Health Series (Young et al., 1997; CBA –) reported a greater positive change in their school and home self-esteem ($p<0.05$ and $p<0.001$, respectively), relationship/communication characteristics ($p<0.001$) and decision-making skills ($p<0.05$). Intervention students also reported less positive attitudes toward the use of alcohol than control students, and showed positive changes on the measures of practices and perceptions of peers' and parents' norms regarding drug use and other illegal drugs (all $p<0.001$).

5.5.3 Summary and evidence statements

Three studies examined general health education programmes that included modules or topics related to alcohol education and SRE. One study examined a programme for children with developmental disabilities.

5.5.3.1 Knowledge and understandings

One study of an intervention that targeted general health behaviours examined the impact on knowledge. A peer tutoring intervention for children with developmental disabilities (Utley et al., 2001; UBA –) resulted in increases in knowledge about the body and its functions, and the effects of drugs. However, these findings were based on a small sample size (n=5) so should be interpreted with caution.

5.5.3.2 Attitudes and values

The impact on attitudes and values was examined in two general health education approaches. There were no effects of the Growing Healthy Curriculum for kindergarten to sixth grade students on attitudes towards alcohol use (Andrews, 1992; CBA –). The life skills components of a general health curriculum were found to have had an impact on attitudes to alcohol at post-test, with intervention students reporting less positive attitudes (Young et al., 1997; CBA –).

5.5.3.3 Personal and social skills

One study (Young et al., 1997; CBA –) examined programme impact on personal and social skills. The life skills components of a general health curriculum were found to have resulted

in positive changes in self esteem and in decision making skills among intervention students at post-test.

5.5.3.4 Alcohol and sexual health

No reported studies reported this outcome

Evidence statement 5

5(b) There is insufficient and inconsistent evidence from two CBA studies and one UBA study[1] to determine the effects of general health education programmes that targeted primary school age children on outcomes related to alcohol use and sexual health.

[1] Andrews 1992 (CBA -); Young et al., 1997 (CBA -); Utley et al., 2001 (UBA -)

Table 5.35. General health education programmes

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Andrews, 1992 Growing Healthy Curriculum	CBA -	USA Kindergarten 6th grade N= NR	Tested every year 6th-12th grade	NR	No evidence that the programme had any impact on alcohol use or behaviours.
Utley et al., 2001 Peer tutoring	UBA -	USA 7-9 years N=5	PT	100%	Results showed an increase in knowledge for all areas covered in the intervention: body parts, body functions, poisons, drugs and their effects, dangerous situations.
Young et al., 1997 Contemporary Health Series	CBA -	USA 6th grade N=328	PT	NR	Intervention resulted in a positive change compared with control group in pupils' school and home self-esteem, relationship/communication characteristics, decision-making skills, and attitudes toward the use of alcohol.

5.6 Social development programmes

5.6.1 Overview of evidence identified

A total of 16 studies were identified that examined seven programmes focused on social development interventions designed to positively influence later behaviour. Six programmes combined school and family-based components while one programme was school-based only. Six programmes looked at outcomes related to alcohol or drugs and one programme investigated outcomes related to both substance misuse and sexual health.

5.6.2 Programmes with a school-based component

Three studies (Kellam et al., 2008; Poduska et al., 2008; van Lier et al., 2009) were identified that examined one social development programme, the Good Behavior Game, which included school-based components only.

Table 5.36. Summary of programme content: Single component social development programmes

Programme	Reference(s)	Programme content
Good Behavior Game	Kellam et al., 2008; Poduska et al., 2008; van Lier et al., 2009	• 2 year programme • Classroom based game; children rewarded for adhering to class rules • Children assigned to groups and encouraged to manage their own and team mates behaviour.

5.6.2.1 Good Behavior Game

Three articles (Kellam et al., 2008; Poduska et al., 2008; van Lier et al., 2009) examined the effects of the Good Behavior Game (GBG), which aimed to promote pro social behaviours whilst reducing disruptive and aggressive behaviour in the classroom over two years in primary school aged children. Two articles (Kellam et al., 2008; Poduska et al., 2008) reported on the effects of the programme at age 19-21, in a cohort of students from schools in Baltimore, USA, who received the programme in the first and second grades (6-8 years old). van Lier and colleagues (2009) examined the impact of the programme on young adolescent outcomes in a sample of 7-year old children from elementary schools in Rotterdam and Amsterdam, the Netherlands. The GBG involved implementing teacher and student chosen rules and rewarding children who did not violate the rules.

Quality assessment

Both studies of the GBG were cluster RCTs and were rated '++' for quality. Both studies detailed well-described interventions, significant follow up times, intention to treat analysis and well reported outcomes. However although well reported, neither study fully detailed the methods used to randomly assign clusters and only the Baltimore-based study (Kellam et al., 2008; Poduska et al., 2008) adequately described the source population.

Findings

Kellam and colleagues (2008; RCT ++) reported a reduction in lifetime alcohol use/dependence disorders in those who participated in the Good Behavior Game; intervention participants reported marginally significantly fewer alcohol use/dependence disorders in young adulthood compared to internal control classes ($p=0.08$) and significantly fewer compared to external classes ($p<0.05$). A marginally significant reduction in the odds of an alcohol diagnosis (OR 0.50; 95% CI 0.25, 0.99) was also reported, implying a 50% reduction in the odds of a lifetime alcohol abuse disorder for those in the intervention group. In young adulthood (Poduska et al., 2008; RCT ++), rates of any service use were significantly lower for males in the intervention group compared to internal controls in both cohorts ($p<0.05$). Rates of drug treatment service use did not significantly differ between groups. In cohort two significantly less males in the intervention group accessed mental or medical health services than internal controls ($p<0.01$).

In the Dutch study, van Lier and colleagues (2009; RCT ++) found no significant effect of participation in the Good Behavior Game on past month or past year alcohol use at three or six year follow up. Over half (54%) of children reported consuming alcohol between the ages of 10-15. However, the authors found that compared to the control group, the rate of growth of alcohol use between three and six years following participation in the intervention was significantly reduced ($p<0.05$).

5.6.3 Programmes combining school and family-based components

Twelve studies were identified that examined six social development programmes, which combined school and family-based components.

Table 5.37. Summary of programme content: Multi-component social development programmes

Programme	Reference(s)	Programme content
Seattle Social Development Project	Hawkins et al., 1999; 2005 ; Lonczak et al.,. 2002 ; O'Donnell et al., 1995	• 5 or 2 year programme versions • Classroom instruction and management • Child skill development • Parent intervention
Raising Healthy Children	Brown et al., 2005; Catalano et al., 2003	• Teacher and staff development workshops • After-school tutoring sessions and study clubs (Grades 4-6), • Parenting workshops and in-home services for selected families (Grades 1-8).
Linking the Interests of Families and Teachers	Eddy et al., 2003; Reid et al., 1999	• Classroom-based programme (20 lessons) • Playground behaviour intervention • Parent management training programme and weekly newsletters • Ongoing access to a classroom-based telephone answering machine

Programme	Reference(s)	Programme content
Developmental drug prevention programmes	Furr-Holden et al., 2004; Ialongo et al., 1999	• Classroom centred intervention: curriculum enhancements, classroom behaviour management practices. • Family School Partnership: staff trained in parent-school communication, weekly home-school activities, parent workshops
Child Development Project	Battistich et al., 2000; 2004	• 3 year classroom curriculum in the upper 3 grades of elementary school • School wide activities • Family involvement activities at home
Positive Action Program	Flay et al., 2003	• Classroom curriculum (140 lessons per grade) • School wide climate programme • Parental and community involvement

5.6.3.1 Seattle Social Development Project

Four articles reported on evaluations of the Seattle Social Development Project (SSDP) (Hawkins et al., 1999, 2005; Lonczak et al., 2002; O'Donnell et al., 1995). The SSDP was delivered to students in the first to sixth grades (full intervention) or fifth and sixth grade only (late intervention), and included modified teaching practices, child social skills training, and developmentally appropriate parent training (O'Donnell et al., 1995). In the fifth and sixth grades, parents were offered participation in Preparing for the Drug Free Years, a five session programme designed to reduce a child's risk for drug use (Hawkins et al., 1999). Both studies were part of a larger ongoing longitudinal study. O'Donnell and colleagues (1995) reported outcomes for students who had received the full intervention programme at the beginning of fifth grade and at the end of sixth grade. Hawkins and colleagues (1999) reported 6-year follow-up data for all fifth grade students assigned to the full and late intervention or control groups. Hawkins and colleagues (2005) reported follow-up data relating to mental health, crime and substance use at age 21 for those who received the full intervention and the late intervention. Lonczak and colleagues (2002) reported outcomes at age 21 for sexual behaviour and associated outcomes for the full intervention group.

Quality assessment

Evaluation of the SSDP was based on a quasi-experimental design (NRCT), with participants non-randomly assigned to intervention or control groups. The study by O'Donnell and colleagues (1995) appeared to have been adequately conducted. The intervention and comparison conditions were well described and the authors tested for attrition biases within the sample. The study was coded 'NRCT +'. The study by Hawkins and colleagues (1999) was also well reported and judged to have been adequately conducted. The study experienced a low rate of attrition, with 93% of participants followed up at 6 years, and was rated 'NRCT +'. Two studies (Lonczak et al., 2002; Hawkins et al., 2005) were follow-up studies of Hawkins and colleagues (1999) so their quality assessment

rating was based on this study. In these two studies, with follow-up of nine years, over 90% of the original sample was retained in the analyses.

Findings

O'Donnell and colleagues (1995; NRCT +) found that at the end of sixth grade there were no differences between intervention and control students on a measure of lifetime alcohol use in a subsample of low income participants (Males: mean difference 0.01 95% CI -0.25, 0.27; Females: mean difference -0.21 95% CI -0.45, 0.03).

At the 6-year follow-up when students were aged 18, Hawkins and colleagues (1999; NRCT +) reported that significant differences were found between control and full SSDP intervention students on alcohol use measures. Although there was no differences in lifetime alcohol use, fewer full intervention students than control students reported having drunk alcohol 10 or more times in the past year (RR 0.61 95% CI 0.39, 0.95; $p<0.05$). Full intervention students were also significantly less likely than control students to have engaged in sexual intercourse ($p<0.05$) and were less likely to have had multiple partners by the age of 18 ($p<0.05$). More control students had been pregnant or gotten someone pregnant, although this finding only approached statistical significance ($p=0.06$), and there was no difference between the full intervention and control in the number of participants that had fathered or had had a baby. At age 18, students who had received the full SSDP intervention reported significantly stronger commitment ($p<0.01$) and attachment to school ($p<0.05$) compared to control students. The authors did not find any significant effects of the late intervention programme. Effect sizes are presented in Table 5.38,

Table 5.38. SSDP: Intervention effects at age 18 (Hawkins et al., 1999; NRCT +)

Outcome	Comparison	Prevalence difference (95% CI)
Lifetime alcohol use	Full intervention vs. control	-1.00 (-10.45, 8.45)
	Late intervention vs. control	-0.80 (-9.05, 7.45)
Lifetime sexually active	Full intervention vs. control	-10.90 (-19.80, -2.00)
	Late intervention vs. control	-6.90 (-14.41, 0.61)
Lifetime multiple sex partners	Full intervention vs. control	-11.80 (-22.31, -1.29)
	Late intervention vs. control	-2.40 (-11.55, 6.75)
Lifetime been pregnant or gotten a woman pregnant	Full intervention vs. control	-9.30 (-17.94, -0.66)
	Late intervention vs. control	1.00 (-7.35, 9.35)
Lifetime had or fathered a baby	Full intervention vs. control	-5.20 (-12.00, 1.60)
	Late intervention vs. control	-0.40 (-7.01, 6.21)

At aged 21 (Hawkins et al., 2005; NRCT +), there were no significant differences between the full and late intervention and control groups for past month alcohol use. Significant outcomes reported for the full-intervention group in comparison to the control groups

included better regulation of emotions (p<0.01), fewer symptoms of social phobias (p<0.05), fewer suicidal thoughts (p<0.01), lower likelihood of being involved in a wide variety of crime in the past year or having a lifetime court record (p<0.05) and a higher likelihood of graduating high school (p<0.01). The vast majority of outcomes for the late-intervention group were non-significant compared to the control group. Effect sizes were calculated and are presented in Table 5.39.

Table 5.39. SSDP: Intervention effects at age 21 (Hawkins et al., 2005; NRCT +)

Outcome	Comparison	Standardised mean difference (95% CI)
High school graduate	Full intervention vs. control	0.10 (0.02, 0.18)
	Late intervention vs. control	0.04 (-0.04, 0.12)
Poor emotional regulation	Full intervention vs. control	-0.15 (-0.25, -0.05)
	Late intervention vs. control	-0.03 (-0.11, 0.05)
Anxiety symptom count	Full intervention vs. control	-0.35 (-0.80, 0.10)
	Late intervention vs. control	-0.06 (-0.45, 0.33)
Social phobia symptom count	Full intervention vs. control	-0.30 (-0.54, -0.06)
	Late intervention vs. control	-0.06 (-0.28, 0.16)
Depressive symptom count	Full intervention vs. control	-0.63 (-1.34, 0.08)
	Late intervention vs. control	-0.35 (-0.96, 0.26)
Suicide thoughts	Full intervention vs. control	-0.30 (-0.48, -0.12)
	Late intervention vs. control	-0.25 (-0.41, -0.09)
Anxiety diagnostic criteria met	Full intervention vs. control	-0.02 (-0.08, 0.04)
	Late intervention vs. control	-0.01 (-0.05, 0.03)
Social phobia diagnostic criteria met	Full intervention vs. control	-0.06 (-0.14, 0.02)
	Late intervention vs. control	-0.01 (-0.09, 0.07)
Depressive diagnostic criteria met	Full intervention vs. control	-0.08 (-0.18, 0.02)
	Late intervention vs. control	-0.08 (-0.16, -0.00)
Any substance use in past month	Full intervention vs. control	-0.08 (-0.16, -0.00)
	Late intervention vs. control	-0.06 (-0.14, 0.02)

Lonczak and colleagues (2002; NRCT +) also examined the effects of the SSDP at age 21 years. Compared to control participants, participants in the full intervention group had, on average, their first sexual experience significantly later (p<0.05) and significantly fewer lifetime sexual partners (p<0.05). Participants in the full intervention group were significantly more likely to report condom use during last intercourse than those in the control group (p<0.05). There were no effects of the intervention on past-year condom use frequency among single participants, condom use during first intercourse or STD diagnosis. Females in the full intervention group were significantly less likely to have become pregnant (p<0.05) or to have had a baby (p<0.05) by age 21 years than females in the control group, but there were no significant differences between the number of intervention and control males who

reported causing a pregnancy or birth. Effect sizes were calculated for these outcomes are presented in Table 5.40 and Table 5.41.

Table 5.40. SSDP: Intervention effects at age 21 - dichotomous (Lonczak et al., 2002; NRCT +)

Outcome	Intervention		Control		OR (95% CI)
	Events	Total	Events	Total	
Condom use during first intercourse	96	131	127	192	1.42 (0.87, 2.3)
Condom use during last intercourse	53	89	68	154	1.88 (1.11, 3.19)
Lifetime STD	19	144	37	205	0.67 (0.38, 1.27)
Lifetime pregnancy	27	71	55	99	0.50 (0.27, 0.93)
Lifetime birth	16	71	40	99	0.42 (0.21, 0.84)
Causing pregnancy	25	73	38	106	0.95 (0.51, 1.78)
Fathering a child	17	73	21	106	1.22 (0.59, 2.53)

Table 5.41. SSDP: Intervention effects at age 21 - continuous (Lonczak et al., 2002; NRCT +)

Outcome	Intervention			Control			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Age at first sexual experience	16.32	2.34	131	15.75	2.35	188	0.24 (0.02, 0.47)
Frequency of condom use	3.28	1.37	81	3.12	1.45	142	0.11 (-0.16, 0.39)
No of lifetime sexual partners	3.58	2.2	144	4.13	2.05	205	-0.26 (-0.47, -0.05)

5.6.3.2 Raising Healthy Children

Two articles (Brown et al., 2005; Catalano et al., 2003) evaluated the effectiveness of the Raising Healthy Children (RHC) programme, a multicomponent programme aimed at reducing adolescent alcohol, cannabis and cigarette use. The programme consisted of: (1) school intervention strategies (including a series of teacher and staff development workshops teaching proactive classroom management techniques; cooperative learning methods and strategies to promote student motivation, participation, reading, and interpersonal problem solving skills); (2) student intervention strategies delivered during grades 4-6, with booster sessions throughout middle and high school years; (3) family intervention strategies (including parenting workshops and in home services, delivered in grades 1-8). Data were reported for students who participated in the programme as first and second grade students and were followed in the first and second grades (Catalano et al., 2003) and from sixth through to tenth grade (Brown et al., 2005).

Quality assessment

Whilst the RCT of the RHC programme (Brown et al., 2005; Catalano et al., 2003) generally appeared to have been well conducted, full details of the methods of randomisation and of the source population were not reported. As a result of these limitations to the study the RCT was rated '+'.

Findings

There was no significant difference between students who received the RHC programme and control students in terms of change in alcohol use over 5 years (Brown et al., 2005). However, there was a significant intervention effect on alcohol use frequency. There was a significantly greater rate of linear decline in alcohol frequency in the intervention group during Grades 8-10 relative to the control group (adjusted mean frequency ES = 0.40; $p < 0.05$).

Catalano and colleagues (2003) reported the effects of the intervention on teacher and parent rated academic performance and social behaviour. In comparison to the control group, teachers rated intervention students as having significantly higher academic performance and commitment to school ($p<0.05$) and significantly higher social competency ($p<0.01$) with increasing growth rate ($p<0.01$) and significantly lower levels of anti social behaviour ($p<0.05$) with decreasing growth rate. When controlled for gender, income and baseline scores, parent reported data indicated intervention students had higher academic performance and school commitment ($p<0.05$) than control students.

5.6.3.3 Linking the Interests of Families and Teachers (LIFT)

Two articles (Eddy et al., 2003; Reid et al., 1999) evaluated the effectiveness of the Linking the Interests of Families and Teachers (LIFT) prevention programme. The aim of the programme was to tackle conduct problems including the use of alcohol and other substances. The programme consisted of a 10-week classroom-based programme delivered to first and fifth grade students, a playground behaviour intervention, a behaviour management programme for parents and weekly newsletters, and ongoing access to a classroom-based telephone answering machine. Reid and colleagues (1999) evaluated the study following its completion and Eddy and colleages (2003) evaluated the programme's effects on fifth graders four years on.

Quality assessment

The study was not well reported (RCT -). Few details were reported regarding the method of randomisation. In addition, intervention and control participants were not matched at

baseline. Intervention students were significantly younger and less likely to be from an ethnic minority.

Findings

Eddy and colleagues (2003; RCT -) reported that significant differences were found in hazard rates between the LIFT intervention schools and control schools. Self-reports of patterned alcohol use during middle school (alcohol use at least once every 2 or 3 months) indicated that youth in the control group were 1.49 times more likely to report patterned alcohol use during middle school than youth in the intervention group. Reid and colleagues (1999), reporting on immediate outcomes from the intervention, found that teacher rated social skills were significantly higher for children who received the intervention group than in the control group.

5.6.3.4 Developmental drug prevention programme

Two studies (Furr-Holden et al., 2004, Ialongo et al., 1999) examined the effectiveness of a programme that incorporated two developmental drug prevention programmes, which targeted problem behaviours in primary school aged children. The two programmes examined were a classroom-centred intervention that combined a classroom-based curriculum with teacher training and a family-school partnership intervention that emphasised parent-school communication and partnership building through workshops and communication activities. Ialongo and colleagues (1999) followed up students at one year and Furr-Holden and colleagues (2004) followed up students five, six and seven years after the intervention between the ages of 11 and 14 years.

Quality assessment

First grade classrooms in nine schools were randomly assigned using computer generated methods to the intervention or control group. Other study methodology aspects were clearly reported such as the level of attrition, which was relatively low over the long follow-up duration of the study, and details of the control group. The study by Ialongo and colleagues (1999) was rated 'RCT ++' for internal consistency. However in the study by Furr-Holden and colleagues (2004), it was clear whether the intervention and control groups were comparable at baseline and the study was coded 'RCT +'.

Findings

At one year follow up, it was reported that those who received the family-school partnership intervention demonstrated significantly fewer problem behaviours than the control group and those who received the classroom curriculum were rated as displaying fewer problem behaviours than boys in the control group (Ialongo et al., 1999; RCT ++). Improvements

were reported for boys only for reading in the classroom curriculum and family-school partnership groups and for maths in the classroom curriculum group.

Furr-Holden and colleagues (2004; RCT +) reported that over three years of assessment in grades 6-8 (age 11-14 years), the percentage of students reporting unsupervised alcohol use did not differ significantly across the intervention and control groups as shown in Table 5.42, and was lowest in the control group (29% of control participants vs. 34% and 37% of classroom-centred intervention participants and family-school partnership participants, respectively).

Table 5.42. Developmental drug prevention programme: Unsupervised alcohol use (Furr-Holden et al., 2004)

Comparison	Intervention		Control		Risk ratio (95% CI)*
	Events	Total	Event	Total	
Classroom-centred intervention vs. control	65	192	52	178	0.95 (0.58, 1.54)
Family-school partnership vs. control	73	196	52	178	1.07 (0.67, 1.71)
*Adjusted for age, sex, family type, teacher-rated total problems, parent management, and family history of drug, alcohol, or tobacco use					

5.6.3.5 Positive Action Program

One study reported on the long-term effectiveness of the Positive Action Program (Flay et al., 2003) that aimed to reduce problem behaviours and enhance school performance through a detailed curriculum consisting of over 140 lessons per grade through kindergarten to sixth grade, a school-climate programme and family involvement components. The study retrospectively examined the effects of the programme through the differences in middle and high schools classes by numbers of students who had or had not received the Positive Action Program in previous years.

Quality assessment

This case-control study (CSS) was rated 'CSS +' for quality. The study was reasonably well reported with follow up at four years. The overall sample was not matched on baselines, but data was provided for a matched sample. Little description was provided of the source population and selection.

Findings

Flay and colleagues (2003; CCS +) reported significantly fewer problem behaviours in middle and high schools with higher numbers of Positive Action graduates. Schools with over 80% Positive Action graduates were significantly less likely to misuse substances in middle schools ($p<0.01$) and high schools ($p<0.05$). There appeared to be educational benefits of the programme with students at elementary schools who received Positive Action scoring 45% better on the Florida Reading Test and 4.5% better on the Florida

Comprehensive Aptitude Test. Middle schools with higher number of Positive Action graduates scored better for reading and maths.

5.6.3.6 Child Development Project

Two studies reported on the effects of the Child Development Project (Battistich et al., 2000; 2004); a programme that aimed to reduce drug use and other problem behaviours through a three year curriculum combined with school-wide activities involving families and activities at home involving both student and parents. The programme was carried out during the final three years of elementary school, and students were followed up post-intervention (Battistich et al., 2000) and during middle school (Battistich et al., 2004).

Quality assessment

The study adequately described allocation of schools, the intervention and details around outcomes from the programme. However, the programme was not implemented equally in schools and the study involved a different cohort of students in each year. Details around participant numbers and attrition rate were not adequately covered. Overall the study was rated 'NRCT +' for quality.

Findings

Following intervention (Battistich et al., 2000; NRCT +), alcohol use among programme students declined from baseline, whereas comparison students showed a small, but non-significant increase (mean difference 0.15; $p<0.10$). Intervention students' alcohol use in 'high change' schools declined over time, whereas control students increased their use (mean difference 0.18; $p<0.05$). In a follow-up study, Battistich and colleagues (2004; NRCT +) reported that intervention and comparison students did not differ with respect to alcohol use in middle school. Intervention students scored significantly higher than comparison students in self-efficacy ($p<0.01$) but not in terms of global self-esteem. Intervention students scored higher than comparison students for positive teacher relations ($p<0.05$) and liking for school ($p<0.05$). For sense of school community and task orientation towards learning, differences approached significance, but no differences were found for academic performance.

5.6.4 Summary and evidence statements

In total, eight programmes that examined primary school-based social development interventions with outcomes relating to substance use or sex and relationships were identified. Interventions focused on the students' behaviour, social skills and values and outcomes for six studies included alcohol and sexual behaviour in adolescence or young adulthood.

5.6.4.1 Knowledge and understanding

None of the included studies reported this outcome.

5.6.4.2 Attitudes and values

Four programmes reported on outcomes relating to attitudes and values. Hawkins and colleagues (2005; NRCT +) reported a positive relationship between students who received the full SSDP intervention and high school graduation, and at follow-up aged 18, intervention students were more committed and attached to their school (Hawkins et al., 1999; NRCT +). Participation in the Raising Healthy Children programme was positively associated with teacher-rated academic performance and school commitment (Catalano et al., 2003; RCT +) while Battistich and colleagues (2004; NRCT +) reported that the Child Development Program effectively improved teacher relations and liking for school in comparison to controls, but found no effect on academic performance. The Positive Action Program was associated with positively impacting upon reading and maths performance at middle school (Flay et al., 2003; CCS +).

5.6.4.3 Personal and social skills

Of the seven programmes detailed here, six included outcomes relating to personal and social skills. In comparison to control students, at the age of 21 full-intervention group participants in the SSDP reported better regulation of emotions and fewer symptoms of social phobias (Hawkins et al., 2005; NRCT +). Teacher-rated levels of anti-social behaviour were found to be lower in students who had received the Raising Healthy Children intervention (Catalano et al., 2003; RCT +) and teacher-rated social skills were deemed to be higher in students who had been exposed to LIFT (Reid et al., 1999; RCT −) when compared to control groups. Ialongo and colleagues (1999; RCT +) found that one year following the Developmental Drug Prevention Programmes those who received the family-school partnership intervention or classroom curriculum demonstrated fewer problem behaviours than controls. Fewer problem behaviours were also reported by Flay and colleagues (2003; CSS +) in their evaluation of the Positive Action Program in middle and high schools with higher numbers of Positive Action graduates. Intervention students in the Child Development Project scored higher than controls in sense of efficacy and global self-esteem and had more positive teacher relations (Battistich et al., 2004; NRCT +).

5.6.4.4 Health and social outcomes related to alcohol and sex and relationships

Evaluation of six programmes included results relating to alcohol use and one of these six also included outcomes in relation to sexual health behaviour.

Following participation in the SSDP, at age 18 full-intervention students reported drinking on fewer occasions than control students (Hawkins et al., 1999; NRCT +) but at age 21 there

was no effect of the intervention on past month alcohol use (Hawkins et al., 2005; NRCT +). Two studies of the SSDP examined sexual health outcomes. At age 18 (Hawkins et al., 1999; NRCT +), the full intervention had positive impacts on sexual health outcomes including number of sexual partners and pregnancy. Lonczak and colleagues (2002; NRCT +) reported that at age 21, the same intervention impacted positively on age of first sexual experience, number of sexual partners, pregnancy, and condom use during last intercourse. A Dutch study of the Good Behaviour Game programme found that it positively impacted upon the rate of growth of alcohol use between 3 and 6 year follow up, but not on past year alcohol use at either time (van Lier et al., 2009; RCT ++). However, Kellam and colleagues (2008; RCT ++) reported that the Good Behaviour Game reduced lifetime alcohol use and dependence in intervention students in young adulthood. LIFT positively impacted upon frequency of alcohol use; participants in the control group were more likely to use alcohol once every 2 or 3 months during middle school than the intervention group (Eddy et al., 2003; RCT −). However, Furr-Holden and colleagues (2004; RCT +) found that in grades 6-8, the percentage of students reporting unsupervised alcohol use was not affected by exposure to the developmental drug prevention programmes. Raising Healthy Children did not reduce prevalence of alcohol use (Brown et al., 2005; RCT +), but did reduce frequency of use. Flay and colleagues (2003; CCS +) reported that participation in the Positive Action Program was associated with less drug use in middle school and high school, but did not specify any programme effects on alcohol that were independent of other drug use.

Evidence statement 6

6(a) There is moderate evidence from one RCT, three NRCTs and one CSS study[1] to suggest that programmes, which target social development and combine school and family-based components, may positively impact on attachment to school and academic performance. This evidence may only be partially applicable to the UK because these programmes were developed and evaluated in the USA, and the findings may not be generalisible beyond the populations studied.

6(b) There is moderate evidence from three RCTs, one NRCT and one CSS study[2] to suggest that programmes, which target social development and combine school and family-based components, may have a positive impact on problem behaviours and social skills. This evidence may only be partially applicable to the UK because these programmes were developed and evaluated in the USA, and the findings may not be generalisible beyond the populations studied.

6(c) There is moderate evidence from three NRCTs[3] to suggest that a social development programme, which combined school and family-based components, may have long term impacts on alcohol use and sexual behaviour in young adulthood. This evidence may only be partially applicable to the UK because these programmes were developed and evaluated in the USA, and the findings may not be generalisible beyond the populations studied.

6(d) There is strong evidence from three RCTs[4] to suggest that the Good Behavior Game, which targeted behaviours in the classroom, may impact on alcohol abuse and dependence in adulthood and slow the rate of alcohol use in adolescence. This evidence may be directly applicable to the UK because although the programme was developed and evaluated in the USA, it has been replicated in populations outside of the USA.

1 Hawkins et al., 1999, 2005 (both NRCT +); Catalano et al., 2003 (RCT +); Battistich et al., 2004 (NRCT +); Flay et al., 2003 (CSS+);

2 Catalano et al., 2003 (RCT +); Reid et al., 1999 (RCT -); Ialongo et al., 1999 (RCT +); Flay et al., 2003 (CSS+); Battistich et al., 2004 (NRCT +);

3 Hawkins et al., 1999, 2005; Lonczak et al., 2002 (all NRCT +)

4 Kellam et al., 2008; Poduska et al., 2008; van Lier et al., 2009 (all RCT ++)

5.43. Social development programmes

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Seattle Social Development Programme					
O'Donnell et al., 1995	NRCT +	USA 1st grade N = 177	PT (6 years)	60%	No significant differences between intervention and control students.
Hawkins et al., 1999	NRCT +	USA 5th grade N = 643	6 years	93%	Fewer students receiving the full intervention reported heavy drinking (compared to control students). No difference in lifetime alcohol use between groups. Students in the full intervention condition reported significantly stronger commitment and attachment to school.
Hawkins et al., 2005	NRCT +	USA 1st - 6th grade & 5th- 6th grade N = 643	9 years	94%	No significant differences between the full and late intervention and control groups for past month alcohol use were reported.
Lonczak et al., 2002	NRCT +	1st - 6th grade N= 376	9 years	93%	Students in the intervention condition reported later age of first sexual experience, lower number of sexual partners, higher rates of condom use in last sexual encounter and lower pregnancy rates amongst females. No significant differences between groups for condom use during the past year or during first intercourse or rate of STD diagnosis.
Raising Healthy Children					
Brown et al., 2005	RCT +	USA Mean 7.7 (SD 0.6) years N= 1,040	6, 7, 8 years	88%	No significant difference between groups in terms of change in alcohol use over 5 years. However, significant intervention effect on alcohol use frequency (greater rate of linear decline in alcohol frequency in the intervention group)
Catalano et al., 2003	RCT +	USA Mean 7.4 (SD 0.6) years N = 938	1, 2 years	98%	Teachers rated intervention students as having higher academic performance, commitment to school and social competency and lower levels of anti social behaviour. Parent reported data indicated intervention students had higher academic performance and school commitment.
Developmental drug prevention programmes					
Furr Holden et al., 2004	RCT +	USA Mean 6.2 (SD 0.3) years N = 653	4, 5 and 6 years	84%	Little impact of either intervention on alcohol use
Ialongo et al., 1999	RCT +	USA Mean 6.2 (SD 0.3) years N = 653	1 year	91%	Students receiving the family-school partnership intervention demonstrated fewer problem behaviours than the control group. Those receiving the classroom curriculum displayed fewer problem behaviours than boys in the control group.

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Good Behaviour Game					
Kellam et al., 2008; Poduska et al., 2008	RCT ++	USA 1st grade N = 922	At age 19-21 years	75%	Intervention students had lower lifetime alcohol use/ dependence disorder than controls and a significant reduction in the odds of a lifetime alcohol abuse disorder. No significant differences between intervention and control groups for access to drug treatment services. Rates of all service use were lower for males against controls in both cohorts.
van Lier et al., 2009	RCT ++	The Netherlands Mean 6.9 (SD 0.6) years N = 666	3 - 6 years	72%	No significant effect of participation in the Good Behavior Game on past month or past year alcohol use at three or six year follow up. The rate of growth of alcohol use between three and six years following participation in the Game was significantly reduced
Child Development Project					
Battistich et al., 2000	NRCT +	USA Grades 3-5 or 4-6 N = 24 schools	4 years	Not reported	Alcohol use among programme students declined, whilst alcohol use in comparison students increased. Intervention students' alcohol use in "high change" schools declined over time, whereas control students' alcohol use increased.
Battistich et al., 2004	NRCT +	USA Grades 3-5 or 4-6 N = 1246	5-7 years	Not reported	Intervention and comparison students did not differ significantly with respect to their use of alcohol in middle school
Linking the Interests of Families and Teachers (LIFT)					
Eddy et al., 2003	RCT -	USA Mean 10.4 years N = 361	4 years	2.8% dropped out	Youth in the control group more likely to report patterned alcohol use during middle school.
Reid et al., 1999	RCT -	USA 1st and 5th grades N = 671	1 year (PT)	Not reported	Teacher rated social skills of children in the intervention group were significantly higher than in the control group. Mothers of children in the intervention group with higher levels of aversive verbal behaviour improved the most.
Other programmes					
Flay et al., 2003 Positive Action Program	CCS +	USA K-6 grade N = 36 schools	4 years	Not applicable	Schools with higher numbers of intervention students were reported to have significantly fewer problem behaviours in middle and high schools. Schools with over 80% Positive Action graduates were significantly less likely to use drugs in middle and high schools.

6 Discussion

6.1 Summary of the review of effectiveness

The review of effectiveness included a total of two systematic reviews and meta-analyses, and 73 primary studies. Studies were grouped according to the intervention focus, resulting in 14 studies of alcohol education programmes, 33 studies of drug (including alcohol) education programmes, nine SRE programmes, three general health education programmes and 16 social development programmes.

6.1.1 Systematic reviews and meta-analyses

Two systematic reviews were identified for inclusion. The review by Spoth and colleagues (2008) focused specifically on the prevention of alcohol use, whereas Gottfredson and Wilson (2008) focused on substance use prevention. Both reviews concluded that there was limited evidence to determine which programme approaches were most effective for primary school aged children, and Gottfredson and Wilson (2008) suggested that intervention with young adolescents may be more effective. Spoth and colleagues (2008) suggested that intervention with younger children may be most effective when it takes place across multiple domains, most typically combining school and family-based intervention.

6.1.2 Alcohol education

A total of 13 studies were identified that examined alcohol education programmes targeting children aged 11 years and under. Nine studies were classroom-based curriculums led by teachers or external contributors, and four studies examined one-off intervention sessions. Of the classroom-based programmes, the PY/PM programme that focused on teaching students about the adverse effects of alcohol on the brain and vehicle safety skills, was shown to have significant effects on knowledge about the effects of alcohol on development and the brain, vehicle safety and media literacy. This effect was demonstrated with third, fourth and fifth grade students (Bohman et al., 2004; Bell et al., 2005a, 2005b) and students in first and second grade (Bell et al., 2007). The long term effects on alcohol consumption were examined for three programmes (AMPS, APPT and PY/PM) but none showed consistent effects. Of the single session interventions, there was evidence that they modified their intended target in the short term (i.e. the expectancy modification intervention modified expectancies) but these effects appeared to be short lived.

6.1.3 Drug education (including alcohol)

A total of 32 studies were identified that examined drug education programmes, which focused on illegal drugs (and tobacco) in addition to alcohol. A total of 20 studies reported on

18 classroom-based programmes, led by teachers (n=11 studies) or external contributors (n=9 studies). Four studies reported on programmes which combined in-school approaches with parent education and eight studies reported on a range of other in-school approaches including theatre in education and a programme based on a retreat format. The effects of these programmes on knowledge and attitudes in relation to alcohol use were not clear. Although LST has been shown to be effective with young adolescents, only very short term outcomes were presented for the study conducted with primary school aged children, and although the programme appeared to have positive effects on normative expectations and self-esteem, these findings were not supported by other studies of the LST approach in this age group. Only two programmes demonstrated effects on alcohol use, a curriculum for Native American students and a normative education programme, DAW. However, the evaluation of the DAW programme was rated poorly and therefore the results of this programme should be interpreted with caution.

6.1.4 Sex and relationships education

Eight studies were identified that examined seven programmes focusing on different approaches to SRE. Two programmes focused on abstinence approaches; three programmes were HIV/AIDS prevention approaches; one programme employed a parenting and care-giving approach; and another aimed to improve young people's sexual health knowledge, personal insight and motivation. All seven programmes were curriculum based and delivered in schools. Programmes based on an abstinence approach or HIV/AIDS prevention appeared to improve knowledge and there were positive effects of two programmes, which specifically targeted communication (FAME and I Want to, I Can…Prevent HIV/AIDS), on parental communication. One abstinence-based programme, Sex Can Wait, was shown to have some long term effects on sexual behaviour, although there was no difference in whether participants had ever had sex, participants who received the intervention were less likely than control participants to report sexual intercourse in the last 30 days, 18 months after intervention.

6.1.5 General health education programmes

Three studies (Andrews, 1992; Utley et al., 2001; Young et al., 1997) were identified that examined general health education programmes which included modules or topics related to alcohol education or SRE. There was no clear evidence of the effectiveness of these programmes in terms of alcohol use or sexual health or related behaviours. Although, one study that examined the impact of the life skills components of a larger health curriculum found post-test effects on attitudes to alcohol, self esteem and decision making skills.

6.1.6 Social development programmes

A total of 16 studies were identified that examined seven programmes focused on social development interventions designed to positively influence later behaviour. Six programmes combined school and family-based components while one programme was school-based only. Programmes that combined classroom-based intervention with components targeting parental participation, and focusing on wider problem behaviours had long term effects on attachment to school, social skills and alcohol use, and the SSDP also had long term effects on sexual health behaviours.

6.2 Summary of review of economic evaluations

No studies of economic evaluations were identified for inclusion in the review.

6.3 Strengths and limitations

This review of the effectiveness and cost-effectiveness of PSHE in primary schools focusing on SRE and alcohol education was based on a comprehensive and systematic literature review. Over 7,500 titles and abstracts were screened for inclusion in the review, and 501 full text articles were reviewed. In addition, the review has been conducted using a standardised and transparent approach, adhering to NICE protocols for the development of NICE public health guidance.

6.3.1 Quality of the included studies

The studies identified for inclusion in the review were based on a range of study designs, with the majority of studies based on an RCT cluster design. Overall only five studies, two SRs and three RCTs, were rated high quality (++). Of the remaining studies, approximately a third were rated moderate quality and two-thirds were rated poor quality. Across the majority of studies, whether participants and/or investigators were blind to group assignment, and whether allocation was concealed was poorly reported on; with most studies not reporting on these aspects. In addition, it was difficult to state with confidence that contamination was acceptability low. In terms of analyses, very few studies reported than an intention-to-treat (ITT) analysis had been conducted, few studies were reported to be sufficiently powered or presented power calculations, and effect size estimates were rarely reported. In addition, not all studies provided sufficient data to calculate effect sizes, with a lack of detail regarding numbers allocated to intervention and control groups. In relation to the external validity of the included studies, generalisiblity was on the whole difficult to judge. Very few studies reported details about the source population or whether the selection of participants resulted in a representative sample.

Approximately 60% of studies only reported the short-term effects (<6 months) of the interventions and programmes examined, with a large proportion of these studies only

reporting immediate post-test effects. There was, therefore, limited evidence on the long term effects of the programmes included in the review on alcohol use and sexual behaviour. The exception to this was the studies that examined social development programmes, the majority of which examined the long term effects of these programmes into young adulthood. Because of the short length of follow-up, outcomes reported tended to be limited to knowledge, attitudes and skills. The choice of outcomes measured across studies varied greatly, and there was little consistency in how outcomes were assessed. This meant that it was not possible to combine studies in a meta-analysis.

6.3.2 Applicability

Six studies (Hurry & McGurk, 1997; Hurry et al., 2000; Paxton et al., 1998; Starkey & Orme, 2001; Tudor-Smith et al., 1995; Welham et al., 2007) reported on evaluations conducted in the UK, all of which evaluated drug education programmes. Four studies were based on UBA designs with short term (<6 months) follow-up and two studies were of an RCT which followed up participants three years later. As with previous reviews in the field of alcohol and drug prevention (Jones et al., 2006, 2007) the vast majority of studies were conducted in the USA. This therefore limits the applicability of a substantial proportion of the evidence identified. As reported previously, the generalisibility of the included studies was difficult to judge and this further limits the applicability of the evidence identified.

6.3.3 How and why programmes worked

Due to the short timescales available, it was beyond the scope of the review to undertake a full examination of how and why the programmes that demonstrated effectiveness worked. In addition, no studies were identified that sought to address this question or that reported mediation or component analysis. It was also not possible to examine how different programme providers or the way in which an intervention was delivered, impacted on programme effectiveness.

6.3.4 Targeting wider risk behaviours

The studies included in this review that examined social development programmes demonstrate that programmes targeting developmental outcomes, such as conduct disorders and social skills, may have long term impacts on alcohol use and sexual health (Hawkins et al., 1999; Lonczak et al., 2002). It was beyond the scope of the review to examine programmes that did not focus on SRE and/or alcohol education. However, the literature searches identified a large body of literature which examined interventions that targeted key risk factors that may predict later alcohol use, including programmes targeting conduct problems and social skills. Two reviews (Adi et al., 2007a, 2007b) undertaken to support the development of NICE guidance on promoting the mental wellbeing of children in

primary education highlighted that there was strong evidence to support the effectiveness of multi-component programmes, which typically combined social skills development curricula and programmes for parents.

6.4 Research recommendations

This review had identified a number of gaps in the evidence in relation to the effectiveness of PSHE in primary schools focusing on SRE and alcohol education. In particular, a lack of research arising from the UK limits the conclusions that can be drawn from the studies identified for inclusion in this review. The following are listed as key research recommendations:

- There needs to be further evaluation of the effectiveness and cost-effectiveness of PSHE approaches in primary school focusing on alcohol education and SRE, which are currently being delivered or planned in the UK. In addition, full economic evaluations are required that consider both the costs and consequences of implementing these types of interventions and programmes.
- Improvements in study design and quality of reporting are needed with respect to all types of study designs. For RCTs, improvements are required with respect to the methods used to randomise participants or clusters and for quasi-experimental study designs, authors should ensure that methods used to allocate intervention and control participants or clusters are clearly reported.

7 Conclusions

Overall, this review of the effectiveness and cost-effectiveness of PSHE in primary schools focusing on SRE and alcohol education has highlighted a number of weaknesses in the evidence base. There is evidence that social development programmes, which combine school- and family-based components, may have long term impacts on school attachment, social skills, alcohol use and sexual health. However, the applicability of these programmes warrants further study in a UK context before widespread implementation can be supported. There is a lack of clear, long-term evidence for the effectiveness of other approaches to SRE and alcohol education, and further good quality, UK-based research is needed.

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Appendix 1. Non-statutory framework for PSHE

Key stage 1

1. **Developing confidence and responsibility and making the most of their abilities**
   a) to recognise what they like and dislike, what is fair and unfair, and what is right and wrong
   b) to share their opinions on things that matter to them and explain their views
   c) to recognise, name and deal with their feelings in a positive way
   d) to think about themselves, learn from their experiences and recognise what they are good at
   e) how to set simple goals.

2. **Preparing to play an active role at citizens**
   a) to take part in discussions with one other person and the whole class
   b) to take part in a simple debate about topical issues
   c) to recognise choices they can make, and recognise the difference between right and wrong
   d) to agree and follow rules for their group and classroom, and understand how rules help them
   e) to realise that people and other living things have needs, and that they have responsibilities to meet them
   f) that they belong to various groups and communities, such as family and school
   g) what improves and harms their local, natural and built environments and about some of the ways people look after them
   h) to contribute to the life of the class and school
   i) to realise that money comes from different sources and can be used for different purposes.

3. **Developing a healthy, safer lifestyle**
   a) how to make simple choices that improve their health and wellbeing
   b) to maintain personal hygiene
   c) how some diseases spread and can be controlled
   d) about the process of growing from young to old and how people's needs change
   e) the names of the main parts of the body
   f) that all household products, including medicines, can be harmful if not used properly
   g) rules for, and ways of, keeping safe, including basic road safety, and about people who can help them to stay safe.

4. **Developing good relationships and respecting differences between people**
   a) to recognise how their behaviour affects other people
   b) to listen to other people, and play and work cooperatively

c) to identify and respect the differences and similarities between people
d) that family and friends should care for each other
e) that there are different types of teasing and bullying, that bullying is wrong, and how to get help to deal with bullying.

Key stage 2

Developing confidence and responsibility and making the most of their abilities

a) to talk and write about their opinions, and explain their views, on issues that affect themselves and society
b) to recognise their worth as individuals by identifying positive things about themselves and their achievements, seeing their mistakes, making amends and setting personal goals
c) to face new challenges positively by collecting information, looking for help, making responsible choices, and taking action
d) to recognise, as they approach puberty, how people's emotions change at that time and how to deal with their feelings towards themselves, their family and others in a positive way
e) about the range of jobs carried out by people they know, and to understand how they can develop skills to make their own contribution in the future
f) to look after their money and realise that future wants and needs may be met through saving.

Preparing to play an active role as citizens

a) to research, discuss and debate topical issues, problems and events
b) why and how rules and laws are made and enforced, why different rules are needed in different situations and how to take part in making and changing rules
c) to realise the consequences of anti-social and aggressive behaviours, such as bullying and racism, on individuals and communities
d) that there are different kinds of responsibilities, rights and duties at home, at school and in the community, and that these can sometimes conflict with each other
e) to reflect on spiritual, moral, social, and cultural issues, using imagination to understand other people's experiences
f) to resolve differences by looking at alternatives, making decisions and explaining choices
g) what democracy is, and about the basic institutions that support it locally and nationally
h) to recognise the role of voluntary, community and pressure groups

i) to appreciate the range of national, regional, religious and ethnic identities in the United Kingdom

j) that resources can be allocated in different ways and that these economic choices affect individuals, communities and the sustainability of the environment

k) to explore how the media present information.

Developing a healthy, safer lifestyle

a) what makes a healthy lifestyle, including the benefits of exercise and healthy eating, what affects mental health, and how to make informed choices

b) that bacteria and viruses can affect health and that following simple, safe routines can reduce their spread

c) about how the body changes as they approach puberty

d) which commonly available substances and drugs are legal and illegal, their effects and risks

e) to recognise the different risks in different situations and then decide how to behave responsibly, including sensible road use, and judging what kind of physical contact is acceptable or unacceptable

f) that pressure to behave in an unacceptable or risky way can come from a variety of sources, including people they know, and how to ask for help and use basic techniques for resisting pressure to do wrong

g) school rules about health and safety, basic emergency aid procedures and where to get help.

Developing good relationships and respecting the differences between people

a) that their actions affect themselves and others, to care about other people's feelings and to try to see things from their points of view

Appendix 2. References to included studies

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Appendix 5. Results of the quality assessment

Table 8.1. Quality assessment: Systematic reviews and meta-analyses

1.1 The study addresses an appropriate and clearly focused question

1.2 A description of the methodology used is included

1.3 The literature search was sufficiently rigorous to identify all relevant studies

1.4 Study quality is assessed and taken into account

1.5 There are enough similarities between the studies selected to make combining them reasonable

Key: ++ Well covered +Adequately addressed - Poorly addressed × Not addressed N/A Not applicable

Reference(s)	Questions					Coding
	1.1	1.2	1.3	1.4	1.5	
Gottfredson & Wilson, 2003	++	++	+	++	+	++
Spoth et al., 2008	++	++	++	++	+	++

Table 8.2. Quality assessment: Randomised controlled trials

	Abbey, 1990	Austin & Johnson, 1995[a]	Bell et al., 2005a	Bell et al., 2007	Bohman et al., 2004	Bühler et al., 2008	Catalano et al., 2003	Corbin et al., 1993[a]	Cruz & Dunn, 2003
Section 1: Population									
1.1 Is the source population or source area well described?	NR	NR	NR	NR	NR	+	NR	+	NR
1.2 Is the eligible population or area representative of the source population or area?	NR	NR	NR	+	NR	–	NR	NR	NR
1.3 Do the selected participants or areas represent the eligible population or area?	+	NR	NR	NR	NR	++	NR	–	NR
Section 2: Method of allocation									
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	+	+	+	+	+	+	NR	+	+
2.2 Were interventions (and comparisons) well described and appropriate?	++	++	+	+	++	++	+	+	++
2.3 Was the allocation concealed?	NR	NR	NR	NR	NR	NR	NR	NR	NR
2.4 Were participants and/or investigators blind to exposure and comparison?	NR	NR	NR	NR	NR	NR	NA	NR	NR
2.5 Was the exposure to the intervention and comparison adequate?	NR	NA	++	NR	NR	NR	++	–	–
2.6 Was contamination acceptably low?	NR	NA	NR	NR	NR	NR	NA	NR	NR
2.7 Were other interventions similar in both groups?	NR	NR	NA	NR	NR	NR	NA	–	NA
2.8 Were all participants accounted for at study conclusion?	++	–	NR	++	++	–	++	–	NR
2.9 Did the setting reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR	NR
2.10 Did the intervention or control comparison reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR	NR
Section 3: Outcomes									
3.1 Were outcome measures reliable?	+	+	+	+	NR	++	++	++	++
3.2 Were all outcome measurements complete?	NR	NR	NR	NR	NR	++	NA	++	NR
3.3 Were all important outcomes assessed?	++	++	+	+	++	++	++	++	+

	Abbey, 1990	**Austin & Johnson, 1995[a]**	**Bell et al., 2005a**	**Bell et al., 2007**	**Bohman et al., 2004**	**Bühler et al., 2008**	**Catalano et al., 2003**	**Corbin et al., 1993[a]**	**Cruz & Dunn, 2003**
3.4 Were outcomes relevant?	++	–	++	++	++	++	++	++	++
3.5 Were there similar follow-up times in exposure and comparison groups?	+	++	++	NR	+	NR	++	NR	NR
3.6 Was follow-up time meaningful?	+	–	–	–	+	–	++	–	–
Section 4: Analyses									
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	++	NR	+	+	++	+	+	NR	++
4.2 Was Intention to treat (ITT) analysis conducted?	NA	NR	NA	NA	NR	NA	NA	NR	NR
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	NR	++	NR	NR	NR	++	NR	–	++
4.4 Were the estimates of effect size given or calculable?	NR	NR	NR	++	NR	++	NR	–	++
4.5 Were the analytical methods appropriate?	++	+	+	+	+	++	++	+	++
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	++	+	+	+	+	++	+	+	++
Section 5: Summary									
5.1 Are the study results internally valid (i.e. unbiased)?	**+**	**+**	**+**	–	**+**	**+**	**+**	–	–
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	–	–	–	–	–	**+**	–	–	–

[a] RCT based on randomisation at the individual level
NR – not reported; NA – not applicable

Table 8.3. Quality assessment: Randomised controlled trials continued

	Godbold, 1999	Hecht et al., 2008	Ialongo et al., 1999	Kellam et al., 2008	Kraus et al., 1994	Pick et al., 2007	Rollin et al., 1992; 1995	Schonfeld et al., 1995	van Lier et al., 2009
Section 1: Population									
1.1 Is the source population or source area well described?	+	NR	NR	+	NR	+	NR	+	NR
1.2 Is the eligible population or area representative of the source population or area?	++	NR	NR	++	NR	NR	NR	+	NR
1.3 Do the selected participants or areas represent the eligible population or area?	NR	+	NR	++	+	NR	NR	+	NR
Section 2: Method of allocation									
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	+	+	++	+	+	+	–	+	+
2.2 Were interventions (and comparisons) well described and appropriate?	+	++	++	++	++	+	+	++	++
2.3 Was the allocation concealed?	NR	NR	++	+	NR	NR	–	NR	+
2.4 Were participants and/or investigators blind to exposure and comparison?	NR	NA	NA	NA	NR	NR	NA	+	NA
2.5 Was the exposure to the intervention and comparison adequate?	–	++	++	NR	++	+	+	+	++
2.6 Was contamination acceptably low?	NR	NR	NA	++	NR	++	NR	NA	++
2.7 Were other interventions similar in both groups?	–	++	NA	++	NR	NR	NR	NA	NR
2.8 Were all participants accounted for at study conclusion?	NR	+	+	+	+	–	–	+	++
2.9 Did the setting reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR	NR
2.10 Did the intervention or control comparison reflect usual UK practice?	NR	NR	NR	NR	NA	NR	NR	NR	NR
Section 3: Outcomes									
3.1 Were outcome measures reliable?	+	+	++	++	+	++	+	++	NR
3.2 Were all outcome measurements complete?	NR	+	++	++	NA	++	+	NR	++
3.3 Were all important outcomes assessed?	+	+	++	++	++	++	+	++	++
3.4 Were outcomes relevant?	+	++	++	++	++	++	+	++	++

	Godbold, 1999	Hecht et al., 2008	Ialongo et al., 1999	Kellam et al., 2008	Kraus et al., 1994	Pick et al., 2007	Rollin et al., 1992; 1995	Schonfeld et al., 1995	van Lier et al., 2009
3.5 Were there similar follow-up times in exposure and comparison groups?	++	++	++	++	++	NR	+	+	++
3.6 Was follow-up time meaningful?	–	+	+	++	+	++	–	+	++
Section 4: Analyses									
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	NR	+	+	++	++	NR	–	++	NR
4.2 Was Intention to treat (ITT) analysis conducted?	NA	NR	++	++	NA	NA	NR	NA	++
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	+	NR	NR	NR	NR	NR	NR	NR	NR
4.4 Were the estimates of effect size given or calculable?	NR	+	–	++	NR	++	–	NR	+
4.5 Were the analytical methods appropriate?	+	++	++	++	+	++	+	++	++
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	+	++	–	++	+	++	–	+	+
Section 5: Summary									
5.1 Are the study results internally valid (i.e. unbiased)?	–	**+**	**++**	**++**	**+**	**+**	–	**+**	**++**
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	**+**	–	–	**+**	**+**	–	–	**+**	–
NR – not reported; NA – not applicable									

Table 8.4. Quality assessment: Non-randomised controlled trials

	Ambtman et al., 1990	Battistich et al., 2000	Denny & Young, 2006	Hahn et al., 2007	Hawkins et al., 1999	Holtz & Twombly, 2007	Masterpaqua et al., 1992	Peterson & Woodward, 1993
Section 1: Population								
1.1 Is the source population or source area well described?	NR	NR	NR	NR	+	+	NR	NR
1.2 Is the eligible population or area representative of the source population or area?	++	NR	NR	+	+	NR	NR	NR
1.3 Do the selected participants or areas represent the eligible population or area?	++	NR	NR	+	+	NR	NR	NR
Section 2: Method of allocation								
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	+	+	–	+	–	–	–	NR
2.2 Were interventions (and comparisons) well described and appropriate?	+	+	+	+	++	+	+	–
2.3 Was the allocation concealed?	NA	–	–	NR	–	NR	NR	NR
2.4 Were participants and/or investigators blind to exposure and comparison?	NR	NA	NA	NA	NR	NR	NR	NA
2.5 Was the exposure to the intervention and comparison adequate?	–	–	NR	NR	++	++	++	NR
2.6 Was contamination acceptably low?	NA	NR	+	++	NR	NR	NA	NR
2.7 Were other interventions similar in both groups?	NR	NR	NR	++	NR	NR	NR	NR
2.8 Were all participants accounted for at study conclusion?	++	NR	-	-	++	NR	NR	NR
2.9 Did the setting reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR
2.10 Did the intervention or control comparison reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR
Section 3: Outcomes								
3.1 Were outcome measures reliable?	–	NR	+	++	NR	+	+	++
3.2 Were all outcome measurements complete?	+	NR	+	++	++	NR	NR	+

	Ambtman et al., 1990	**Battistich et al., 2000**	**Denny & Young, 2006**	**Hahn et al., 2007**	**Hawkins et al., 1999**	**Holtz & Twombly, 2007**	**Masterpaqua et al., 1992**	**Peterson & Woodward, 1993**
3.3 Were all important outcomes assessed?	+	++	+	++	++	+	+	–
3.4 Were outcomes relevant?	+	++	+	++	++	+	++	+
3.5 Were there similar follow-up times in exposure and comparison groups?	–	+	+	++	++	+	NR	NR
3.6 Was follow-up time meaningful?	–	–	+	+	++	–	NR	–
Section 4: Analyses								
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	NR	+	NR	+	++	+	-	NR
4.2 Was Intention to treat (ITT) analysis conducted?	NA	NA	NA	NR	NR	NA	NA	NR
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	NR	NR	NR	NR	NR	NR	NR	NR
4.4 Were the estimates of effect size given or calculable?	NR	+	NR	+	++	NR	NR	–
4.5 Were the analytical methods appropriate?	+	+	+	++	++	+	+	+
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	+	+	NR	++	++	+	+	–
Section 5: Summary								
5.1 Are the study results internally valid (i.e. unbiased)?	**+**	**+**	**–**	**+**	**+**	**–**	**–**	**–**
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	**+**	**–**	**–**	**–**	**+**	**–**	**–**	**–**
NR – not reported; NA – not applicable								

Table 8.5. Quality assessment: Controlled before and after studies

	Andrews, 1992	Baker, 2004	Bell et al., 2005b	Flay et al., 2003	Kreutter & Gewirtz, 1991	Raybuck & Hicks, 1994	Spear et al., 1997	Stevens et al., 1996	Wright, 2007	Young et al., 1997
Section 1: Population										
1.1 Is the source population or source area well described?	NR	++	+	NR	NR	NR	NR	+	+	NR
1.2 Is the eligible population or area representative of the source population or area?	NR	+	NR	NR	NR	NR	NR	+	NR	NR
1.3 Do the selected participants or areas represent the eligible population or area?	NR	–	NR	NR	NR	–	NR	NR	NR	NR
Section 2: Method of allocation										
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	+	NR	+	NA	+	+	NR	NA	NA	NR
2.2 Were interventions (and comparisons) well described and appropriate?	-	++	NR	+	–	–	+	–	++	–
2.3 Was the allocation concealed?	NA	NR	NR	NA	NA	NA	NR	+	NA	NR
2.4 Were participants and/or investigators blind to exposure and comparison?	NR	NR	NR	NA	NR	NA	NA	+		NR
2.5 Was the exposure to the intervention and comparison adequate?	NR	+	++	NR	NR	NR	NR	NR	NR	+
2.6 Was contamination acceptably low?	NA	NR	NR	NA	NR	NA	NR	NA	–	NA
2.7 Were other interventions similar in both groups?	NR	NR	NR	–	NR	NR	NR	NA	–	NA
2.8 Were all participants accounted for at study conclusion?	–	NR	NR	NA	NR	–	–	++	–	NR
2.9 Did the setting reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
2.10 Did the intervention or control comparison reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Section 3: Outcomes										
3.1 Were outcome measures reliable?	NR	+	+	+	NR	+	++	NR	NR	++
3.2 Were all outcome measurements complete?	NR	NR	NR	+	NA	NR	NR	NA	+	++
3.3 Were all important outcomes assessed?	++	–	+	+		–	+	++	+	++

3.4 Were outcomes relevant?	++	+	+	+	++	+	++	++	++	++
3.5 Were there similar follow-up times in exposure and comparison groups?	NR	NA	+	+	+	NR	NR	++	NR	++
3.6 Was follow-up time meaningful?	-	+	++	+	-	-	-	++	++	++
Section 4: Analyses										
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	NR	-	++	+	NR	-	NR	NR	NR	NR
4.2 Was Intention to treat (ITT) analysis conducted?	NA	NA	NA	NA	NA	NA	NR	NA	NA	NA
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	NR	NR	NR	NR	NR	NR	NR	NR	+	NR
4.4 Were the estimates of effect size given or calculable?	NR	NR	NR	+	NR	NR	NR	NR	NR	NR
4.5 Were the analytical methods appropriate?	-	++	++	+	+	+	+	++	+	+
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	+	+	++	+	++	+	+	++	+	++
Section 5: Summary										
5.1 Are the study results internally valid (i.e. unbiased)?	-	-	-	+	-	-	-	-	-	-
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	-	-	-	-	-	-	-	+	-	+
NR – not reported; NA – not applicable										

Table 8.6. Quality assessment: Uncontrolled before and after studies

	Abel & Greco, 2008	Gamble & Burgess, 1994	Gaskins et al., 2002	Hall-Long & Dishop, 1999	Paxton et al., 1998	Starkey & Orme, 2001	Tudor-Smith et al., 1995	Utley et al., 2001	Wackett et al., 2000	Welham, 2007	Witt & Witt, 1995
Section 1: Population											
1.1 Is the source population or source area well described?	NR	NR	+	+	–	NR	–	++	NR	NR	NR
1.2 Is the eligible population or area representative of the source population or area?	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1.3 Do the selected participants or areas represent the eligible population or area?	NR	NR	NR	NR	NR	–	NR	–	NR	NR	NR
Section 2: Method of allocation											
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	NA	NA	NA	NA	NA	NA	NA	NA	NR	NA	NA
2.2 Were interventions (and comparisons) well described and appropriate?	+	+	–	++	–	NA	–	+	+	+	+
2.3 Was the allocation concealed?	NA	NA	NA	NA	NA	NA	NA	NA	NR	NA	NA
2.4 Were participants and/or investigators blind to exposure and comparison?	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2.5 Was the exposure to the intervention and comparison adequate?	NA	NA	NR	NR	NR	NA	-	+	++	NR	NR
2.6 Was contamination acceptably low?	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2.7 Were other interventions similar in both groups?	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2.8 Were all participants accounted for at study conclusion?	–	NR	–	NR	+	+	–	++	++	NA	–
2.9 Did the setting reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
2.10 Did the intervention or control comparison reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Section 3: Outcomes											
3.1 Were outcome measures reliable?	+	NR	++	NR	NR	–	+	+	–	NR	NR
3.2 Were all outcome measurements complete?	NA	NR	+	NR	NR	+	NR	++	++	NA	NR
3.3 Were all important outcomes assessed?	NA	–	+	+	–	–	+	++	–	NA	+

3.4 Were outcomes relevant?	NA	+	+	++	-	+	+	++	+	NA	+
3.5 Were there similar follow-up times in exposure and comparison groups?	NA	NA	NA	NA	NA	NA	NA	NA	++	NA	NA
3.6 Was follow-up time meaningful?	-	-	-	NR	-	-	+	-	+	NR	-
Section 4: Analyses											
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	NA	NA	NA	NA	NA	NA	NA	NA	NR	NA	NA
4.2 Was Intention to treat (ITT) analysis conducted?	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	NR	NA	NR	NR	NR	++	NR	-	NR	NR	NR
4.4 Were the estimates of effect size given or calculable?	+	-	+	NR	-	+	NR	NA	NR	NA	NA
4.5 Were the analytical methods appropriate?	+	+	+	-	-	++	++	-	-	NA	-
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	+	-	+	NA	NA	+	NR	NR	NR	NA	NA
Section 5: Summary											
5.1 Are the study results internally valid (i.e. unbiased)?	-	-	-	-	-	-	-	-	-	-	-
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	-	-	-	-	-	-	-	-	-	-	-
NR – not reported; NA – not applicable											

Appendix 6. Results of quality assessment for studies included in Jones and colleagues (2007)

Table 8.7. Quality assessment for RCTs and NRCTs

1.1 The study addressed an appropriate and clearly focused question
1.2 The assignment of participants to intervention groups is randomised
1.3 An adequate concealment method is used
1.4 Participants and investigators are kept 'blind' about intervention allocation
1.5 The intervention and control groups are similar at the start of the trial
1.6 The only difference between groups is the intervention under investigation
1.7 All relevant outcomes are measured in a standard, valid and reliable way
1.8 What percentage of the participants or clusters recruited into each intervention arm of the study dropped out before the study was completed?
1.9 All participants are analysed in the groups to which they were allocated? (ITT)
1.10 Where the study is carried out at more than one site, results are comparable for all sites

Key: ++ Well covered + Adequately covered - Poorly covered × Not addressed NR Not reported N/A Not applicable

Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Allison et al., 1990	++	-	×	N/A	-	+	++	8%	×	×	-
Botvin et al., 2003	++	-	×	N/A	++	×	+	Matched data not available for 44%	×	×	-
Brown et al., 2005	++	+	NR	N/A	+	-	++	12%	+	×	+
Donaldson et al., 1995; 2000	+	-	NR	N/A	NR	NR	++	NR	NR	N/A	-

Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Eddy et al., 2003	++	+	×	×	-	-	+	3%	+	N/A	-
Furr-Holden, 2004	++	++	N/A	N/A	-	-	+	16%	+	NR	+
Hurry and McGurk 1997; Hurry et al., 2000	++	+	×	NR	-	+	+	NR	NR	N/A	+
O'Donnell et al., 1995	+	N/A	N/A	N/A	+	+	+	40%	NR	N/A	+
Padget et al., 2006	++	N/A	N/A	N/A	+	++	++	Intervention 12% and control 12%	×	NR	+
Schinke and Tepavac, 1995	++	N/A	N/A	N/A	×	++	+	NR	×	NR	-
Schinke et al., 2000	++	+	+	×	++	-	++	14.11% total	++	×	+
Shope et al., 1992	+	×	×	N/A	-	×	-	28% at 2.5 yr	×	×	-
Sigelman et al., 2004	++	-	×	N/A	+	-	++	NR	×	NR	+

Table 8.8. Quality assessment for controlled before and after studies

1.1 Contemporaneous data collection

• Score DONE pre and post intervention periods for study and control sites are the same.

• Score NOT CLEAR if it is not clear in the paper, e.g. dates of collection are not mentioned in the text.

• Score NOT DONE if data collection was not conducted contemporaneously during pre and post intervention periods for study and control sites.

1.2 Appropriate choice of control site

Studies using second site as controls:

• Score DONE if study and control sites are comparable with respect to dominant reimbursement system, level of care, setting of care and academic status.

• Score NOT CLEAR if not clear from paper whether study and control sites are comparable.

• Score NOT DONE if study and control sites are not comparable.

1.3 Baseline measurement

• Score DONE if performance or patient outcomes were measured prior to the intervention, and no substantial differences were present across study groups (e.g. where multiple pre intervention measures describe similar trends in intervention and control groups);

• Score NOT CLEAR if baseline measures are not reported, or if it is unclear whether baseline measures are substantially different across study groups;

• Score NOT DONE if there are differences at baseline in main outcome measures likely to undermine the post intervention differences (e.g. are differences between the groups before the intervention similar to those found post intervention).

1.4 Characteristics for studies using second site as control

• Score DONE if the authors state explicitly that the primary outcome variables were assessed blindly OR the outcome variables are objective e.g. length of hospital stay, drug levels as assessed by a standardised test;

• Score NOT CLEAR if not specified in the paper;

• Score NOT DONE if the outcomes were not assessed blindly.

1.5 Blinded assessment of primary outcome(s)

• Score DONE if the authors state explicitly that the primary outcome variables were assessed blindly OR the outcome variables are objective e.g. length of hospital stay, drug levels as assessed by a standardised test;

• Score NOT CLEAR if not specified in the paper;

• Score NOT DONE if the outcomes were not assessed blindly.

1.6 Protection against contamination

Studies using second site as control

• Score DONE if allocation was by community, institution, or practice and is unlikely that the control group received the intervention;

• Score NOT CLEAR if providers were allocated within a clinic or practice and communication between experimental and group providers was likely to occur;

• Score NOT DONE if it is likely that the control group received the intervention (e.g. cross-over studies or if individuals rather than providers were randomised).

1.7 Reliable primary outcome measure(s)

• Score DONE if two or more raters with at least 90% agreement or kappa greater than or equal to 0.8 OR the outcome is obtained from some automated system e.g. length of hospital stay, drug levels as assessed by a standardised test;

• Score NOT CLEAR if reliability is not reported for outcome measures that are obtained by chart extraction or collected by an individual;

• Score NOT DONE if agreement is less than 90% or kappa is less than 0.8.

1.8 Follow up of professionals (protection against exclusion bias)

• Score DONE if outcome measures obtained 80-100% subjects allocated to groups. (Do not assume 100% follow-up unless stated explicitly.);

• Score NOT CLEAR if not specified in the paper;

• Score NOT DONE if outcome measures obtained for less than 80% of individuals allocated to groups.

1.9 Follow up of individuals

• Score DONE if outcome measures obtained 80-100% of individuals allocated to groups or for individuals who entered the study. (Do not assume 100% follow-up unless stated explicitly.);

• Score NOT CLEAR if not specified in the paper;

• Score NOT DONE if outcome measures obtained for less than 80% of individuals allocated to groups or for less than 80% of individuals who entered the study.

Reference(s)	Question									Coding
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	
Hawthorne et al., 1995; Hawthorne, 1996	Not clear	Done	Not clear	Done	Done	Not clear	Not done	Not clear	Not clear	-
Zavela et al., 1997	Not done	Not done	Not done	Not clear	Not done	Done	Done	Not clear	Done	-
Zavela et al., 2004	Done	Not clear	Not done	Not done	Not done	Not clear	Done	Not clear	Not clear	-

Appendix 7. Conversion table for English key stages and US grade equivalents

Age	England		USA	
		Year		Grade
0-4	Pre-School	-		-
4-5		-	Pre Kindergarten	-
5-6	Primary School (Key Stage 1)	1	Kindergarten	-
6-7		2	Elementary School	1
7-8	Junior School (Key stage 2)	3		2
8-9		4		3
9-10		5		4
10-11		6		5
11-12	Lower Secondary (Key stage 3)	7	Middle School	6
12-13		8		7
13-14		9		8
14-15	Upper Secondary (Key stage 4)	10	High School	9
15-16		11		10
16-17	6th Form College	-		11
17-18		-		12