# Providing public information to prevent skin cancer. Review 2

# Barriers to and facilitators to conveying information to prevent first occurrence of skin cancer: a systematic review of qualitative research

**COMMISSIONED BY:** NICE Centre for Public Health Excellence

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## About the Peninsula Technology Assessment Group (PenTAG)

The Peninsula Technology Assessment Group is part of the Institute of Health Service Research at the Peninsula Medical School. PenTAG was established in 2000 and carries out independent Health Technology Assessments for the UK HTA Programme, systematic reviews and economic analyses for NICE (Technology Appraisal and Centre for Public Health Excellence) and systematic reviews as part of the Cochrane Collaboration Heart Group, as well as for other local and national decision-makers. The group is multi-disciplinary and draws on individuals' backgrounds in public health, health services research, computing and decision analysis, systematic reviewing, statistics and health economics. The Peninsula Medical School is a school within the Universities of Plymouth and Exeter. The Institute of Health Research is made up of discrete but methodologically related research groups, among which Health Technology Assessment is a strong and recurring theme. Projects to date include:

- The Effectiveness And Cost-Effectiveness Of Imatinib (STI 571) In Chronic Myeloid Leukaemia - A Systematic Review (2002)
- Screening For Hepatitis C Among Injecting Drug Users And In Genitourinary Medicine (GUM) Clinics - Systematic Reviews Of Effectiveness, Modelling Study And National Survey Of Current Practice (2002)
- Systematic Review Of Endoscopic Sinus Surgery For Nasal Polyps (2003)
- The Effectiveness And Cost-Effectiveness Of Imatinib For First Line Treatment Of Chronic Myeloid Leukaemia In Chronic Phase (2003)
- The Effectiveness And Cost-Effectiveness Of Microwave And Thermal Balloon Endometrial Ablation For Heavy Menstrual Bleeding - A Systematic Review And Economic Modelling (2004)
- Do The Findings Of Case Series Studies Vary Significantly According To Methodological Characteristics?(2005)
- The Effectiveness And Cost-Effectiveness Of Pimecrolimus And Tacrolimus For Atopic Eczema - A Systematic Review And Economic Modelling (2005)
- The Effectiveness And Cost-effectiveness Of Dual Chamber Pacemakers Compared To Single Chamber Pacemakers For Bradycardia Due To Atrioventricular Block Or Sick Sinus Syndrome - Systematic Review And Economic Evaluation (2005)
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- The Cost-Effectiveness of testing for hepatitis C (HCV) in former injecting drug users. Systematic Review And Economic Evaluation. (2006)
- The Effectiveness and Cost-Effectiveness of Cinacalcet for Secondary Hyperparathyroidism in end stage renal disease patients on dialysis. Systematic Review And Economic Evaluation (2007)
- The effectiveness and cost-effectiveness of Carmustine Implants and Temozolomide for the treatment of newly-diagnosed High Grade Glioma**.** Systematic Review And Economic Evaluation (2007)

- The Effectiveness and Cost-Effectiveness of Cardiac Resynchronisation Therapy for Heart Failure. Systematic Review And Economic Evaluation (2007)
- Inhaled Corticosteroids and Long-Acting Beta2-Agonists for The Treatment of Chronic Asthma in Adults and Children Aged 12 Years and Over: a Systematic Review and Economic Analysis (2007)
- Inhaled Corticosteroids and Long-Acting Beta2-Agonists for The Treatment of Chronic Asthma an Children Under the Age of 12 Years: a Systematic Review and Economic Analysis (2007)
- The Effectiveness and Cost-Effectiveness of Cochlear Implants for Severe to Profound Deafness in Children and Adults: A Systematic Review and Economic Model (2008)
- The Effectiveness and Cost-Effectiveness of Methods of Storing Donated Kidneys from deceased donors: A Systematic Review and Economic Model (2008)
- Bevacizumab, sorafenib tosylate, sunitinib and temsirolimus for renal cell carcinoma: A systematic review and economic model (2008)
- Barriers to and facilitators for the effectiveness of multiple risk factor programmes aimed at reducing cardiovascular disease within a given population: a systematic review of qualitative research (2009)

## Collaborations

Work for the NICE Centre for Public Heath Excellence is carried out in close collaboration with the West Midlands Health Technology Assessment Centre at the University of Birmingham who undertook title and abstract screening for this review.

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## Declaration of authors' competing interests

No authors have competing interests.

# List of abbreviations

| | |
|---|---|
| CPHE | Centre for Public Health Excellence |
| FGD | Focus Group Discussion |
| PenTAG | Peninsula Technology Assessment Group |
| UV | Ultra-violet |
| SPF | Sun Protection factor |
| WMHTAC | West Midlands Health Technology Assessment Centre |

# Glossary of terms

| | |
|---|---|
| Cognitive interviewing | Interviews used to uncover cognitive processes and meanings related to events. Originally developed in cognitive psychology but developed for research use, for example to assess how survey questions are interpreted by those answering completing them. |
| Constant comparative method | A method of analysis and theory generation originally described by Glaser and Strauss (1967) in developing grounded theory. In the course of conducting research, initial coding and categories inform data collection and further analysis, which test and refine them and test provisional hypotheses for validity against other examples of the phenomenon under examination. Unhelpfully, the term is also often used generally, to describe an analytic process that does not lead to theory development. |
| Disciplinary gaze | Part of a wider social theory (originally described by Foucault, 1975) which held that modern nation states regulate individuals through constant surveillance to ensure their behaviour aligns with social norms and expectations. This potent "disciplinary gaze" replaced historical reliance on actual violence and its public presentation. |
| Discourse analysis | Used to describe a range of approaches that analyse written or spoken text, in which language is seen as reflecting and perpetuating particular social and political structures. It may be used to understand how an issue becomes defined in a certain way. In policy making, this definition can have implications for the way in which an issue is discussed and the route which policy takes. |
| Grounded theory | The development of theory from qualitative research findings that explain how an aspect of the social world works (originally described by Glaser & Strauss, 1967 although the authors have since diverged in their views about its meaning and conduct). Key elements of grounded theory include constant comparison, simultaneous collection and analysis of data, simultaneous generation and testing of hypotheses, theoretical sampling. Throughout, the method places primary importance on the development of an analytic approach based upon the perspectives of research participants (i.e. one that is "grounded" in the data) rather than researchers' pre-defined concepts. |
| Health Belief Model | A theory which tries to explain health behaviour in terms of understanding how people perceive the threat posed by a condition (susceptibility and severity), and the benefits of avoiding it and factors influencing the decision to act (barriers, cues to action and self-efficacy). |
| Interpretive phenomenological analysis | A method of qualitative research (developed in psychology) which tries to understand the "lived experience" and how a person makes sense of, and ascribes meaning to, a phenomenon. |
| Rash vest | A stretchy, nylon long or short sleeved top, used by surfers to protect from the sun and prevent chaffing. All in one rash suits are also available for children |
| Social Cognitive Theory | A theory that tries to explain how people acquire and maintain behaviour patterns, relating to personal and environmental factors. |
| Social Learning Theory | A theory that places learning in a social context – people learn from each other through mechanisms like observation, imitation and modelling. |
| Thematic analysis | Analysis of qualitative data into descriptive, thematic categories without further development into analytically useful concepts or interpretive explanations or theories. |

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# 1. Summary

## 1.1. Introduction

This report presents the findings of a systematic review of qualitative research about the prevention of skin cancer attributable to UV exposure. It is the third of three evidence reviews produced for the NICE Centre for Public Health Excellence that examine the prevention of skin cancer through the provision of public information.

## 1.2. Aim

The aim of this evidence review is to understand the elements that contribute to the successful or unsuccessful conveyance of skin cancer prevention messages provided to the public. Two primary research questions informed the review:

1. What factors help to convey information to prevent the first occurrence of skin cancer attributable to UV exposure?

2. What factors hinder the communication of primary prevention messages about skin cancer?

In addition three secondary considerations were also examined:

i. Any environmental, social and cultural factors (covering financial/human resource factors) that prevent or support the uptake of the information.

ii. Availability and accessibility for different populations.

iii. Views about the content of information provided or the way in which it is conveyed.

## 1.3. Methods

The review used published evidence that was identified through a search of electronic bibliographic databases and websites using subject terms and qualitative research filters, together with reference list checks.

Study reports were included if they reported in English on qualitative research that focused on UV protection and/or primary prevention of skin cancer. Each included study was quality appraised, and the findings, in the form of key themes, concepts and supporting quotations, were extracted. Details were recorded in an evidence table for each study.

Evidence tables for each included study were read and reread by two reviewers who collaborated to develop a coding scheme that was framed by the Health Belief Model. This provides the conceptual framework for the synthesis in order to assess factors that might help to convey, or hinder the communication of primary prevention messages about skin cancer. The Health Belief Model assesses potential health related behaviour change in terms of individuals' perceived susceptibility to the condition, the perceived severity of the condition, the perceived benefits of adopting changed behaviour, the perceived barriers to adopting this behaviour, "cues to action" that encourage adoption of preventative behaviour and finally, self efficacy or the perceived ability to make such changes.

## 1.4. Findings

Sixteen study reports (relating to 15 separate studies) were included from the UK, USA, Australia, Canada and New Zealand. The quality of the included studies was varied, with seven rated as poor.

| ***Evidence statement 1: Perceived susceptibility*** |
|---|
| 1a. Four study reports of qualitative research discuss perceived susceptibility to skin cancer (Gillespie et al, 1993 [-]; Glanz et al, 1999 [+]; Reeder et al, 2000 [-] and Wright & Bramwell, 2001 [-]).<br><br>1b. Three studies (Gillespie et al, 1993; Glanz et al, 1999 and Wright & Bramwell, 2001) report low perceptions of susceptibility to skin cancer among children and older adults.<br><br>1c. Three study reports, among both children and adults, show the belief that darker skin tones are protective against skin cancer. (Gillespie et al, 1993; Reeder et al, |

2000 and Wright & Bramwell, 2001)

***Evidence statement 2: Perceived severity***

2a. Six study reports of qualitative research discuss perceptions of the severity of skin cancer or sun exposure (Gerbert et al, 1996 [+]; Gillespie, 1993 [-]; Glanz et al 1999 [+]; Lupton & Gaffney, 2006 [+]; Murray & Turner, 2004 [+] and Wright & Bramwell, 2001 [-]).

2b. Perceived severity of sun exposure was low in children (Glanz et al 1999; Gillespie, 1993), young adults (Gillespie, 1993), older adults (Wright & Bramwell, 2001) and sunbed users (Murray & Turner, 2004). Children were more aware of the short term discomfort of sun exposure than long term risks (Glanz et al 1999). Studies in adults found skin cancer was thought to be easily cured (Glanz et al 1999), a possible future concern (Gillespie, 1993), something people preferred not to think about (Murray & Turner, 2004 and Wright & Bramwell, 2001) or outweighed by the perceived short term benefits of a tan (Gillespie 1993 and Murray & Turner, 2004).

2c. Four studies suggest that photo-aging was taken seriously by participants, especially women, (Gerbert et al, 1996; Gillespie et al, 1993; Lupton & Gaffney, 2006 and Murray & Turner, 2004), in one case suggesting that this was perceived as a more serious and real concern than skin cancer (Gerbert et al 1993).

***Evidence statement 3: Perceived benefits***

3a. Eight study reports of qualitative research discuss the perceived benefits of sun protection behaviour (Carter, 1997 [+]; Gillespie et al, 1993 [-]; Glanz et al, 1999 [+]; Lupton & Gaffney 1996 [+]; Murray & Turner, 2004 [+]; Shoveller et al 2003 [++]; Tones et al, 1995 [-] and Wright & Bramwell, 2001 [-]).

3b. In two study reports, there was conflicting evidence about whether children were aware of the risk of skin cancer and so the benefits of sun safety behaviour (Gillespie et al, 1993 and Glanz et al, 1999). Parents and children recalled sun safety advice (Glanz et al, 1999 and Lupton & Gaffney, 2006) and parents were keen to start sun protection with their children when young (Glanz et al, 1999).

3c. One study report suggests that knowledge of the benefits of sun protection may

not be translated into safe sun practices, as a tan is seen as socially beneficial (Carter, 1999).

3d. One study report found older adults may have misinformation about the causes of skin cancer, limiting their perceptions of the benefits of sun protection (Wright & Bramwell, 2001). In addition, four study reports revealed erroneous beliefs that getting a tan was protective of skin damage (Glanz et al 1999; Murray & Turner, 2004; Shoveller et al 2003 and Tones et al, 1995) and in two study reports, participants believed that getting burnt was the prelude to a deep tan, and that high protection sunscreen might prevent deep tanning (Carter 1997 and Lupton & Gaffney, 2006).

***Evidence statement 4: Perceived barriers - Positive perceptions of a tan***

4a. Tanned skin is regarded positively in a number of ways described across nine study reports of qualitative research: as healthy (in contrast to untanned, white skin, which is seen as unhealthy), attractive, endorsed by peers and a key symbol of a good holiday (Carter, 1997 [++]; Gerbert et al, 1996 [+]; Gillespie et al 1993 [-]; Goodlad et al, 1995 [-]; Lupton & Gaffney, 1996 [+]; Murray & Turner, 2004 [+]; Reeder et al, 1997 [-]; Shoveller et al 2003 [++] and Young et al, 2005 [+])

4b. Seven study reports show that tanned people are seen as healthy by children, adolescents and adults (Carter, 1997; Gerbert et al, 1996; Goodlad et al, 1995; Lupton & Gaffney, 2006; Murray & Turner, 2004; Reeder et al, 1997 and Shoveller et al 2003). One study reported that the sun was positively regarded as a source of vitamin D (Gerbert et al 1996).

4c. Three study reports (from Scotland, Australia and Canada) describe negative associations with white, untanned skin, which was described as unhealthy and indicative of being unfit (Carter, 1997; Lutpon & Gaffney, 2006 and Shoveller et al, 2006).

4d. Seven study reports, among children, adolescents and adults, describe tanned skin as being physically attractive (Carter, 1997; Gillespie et al 1993; Goodlad et al, 1995; Lupton & Gaffney, 2006; Murray & Turner, 2004; Shoveller et al, 2003 and Young et al, 2005). Two studies thought that bad skin and acne were cleared up by UV exposure (Carter, 1997 and Murray & Turner, 2004).

4e. Peers are reported an important influence on UV exposure in three studies among adolescents and sunbed users as they may react positively to tans. (Gillespie et al 1993; Murray & Turner, 2004 and Shoveller et al, 2003).

4.f Two UK study reports show that a tan signifies a good holiday, especially a holiday abroad, and could be seen as a necessary "symbolic souvenir" (Carter, 1997 and Goodlad et al, 1995).

***Evidence statement 5: Perceived barriers – The hassle of protection***

5a. Sun protection through use of sunscreen, wearing hats and covering up with long sleeves all had limitations. Sunscreen use is seen as a hassle in six study reports of qualitative research due to its expense, mess, time to apply and potential to cause irritation or allergies (Carter, 1997 [+]; Geller et al, 2008 [-]; Gerbert et al, 1996 [+]; Glanz et al, 1999 [+]; Goodlad et al 1995 [-] and Reeder et al 2000 [-]).

5b. In three study reports, parents say that children were uncooperative when it came to applying sunscreen (Goodlad et al, 1995; Glanz et al, 1999 and Reeder et al, 2000).

5c. Four study reports highlight impracticalities of hat-wearing (Gillespie et al 1993; Glanz et al 1999; Lupton & Gaffney, 2006 and Reeder et al, 2000) which limits children's activities, and may be rejected as unfashionable.

5d. In three study reports, covering up through wearing long sleeved tops was seen as uncomfortable in the heat (Gillespie et al 1993; Glanz et al 1999; Lupton & Gaffney, 2006). Rash vests and wetsuits may be better for young children on the beach, as t-shirts may be repeatedly removed (Goodlad et al 1995; Reeder et al 2000).

***Evidence statement 6: Perceived barriers – Structural challenges in schools***

6a. Three studies discuss structural or policy limitations to skin cancer prevention in schools (Geller et al, 2008 [-]; Gillespie et al 1993 [-] and Glanz 1999 [+]) such as limited ability to change scheduling around lunchtime to avoid the hottest part of the day (Geller et al, 2008 and Gillespie et al 1993).

6b. Provision of shade outside is seen as a possible strategy (Geller et al 2008 and

Glanz et al 1999), but costly (Geller et al 2008) and not always easy to use by playing children (Gillespie et al 1993).

***Evidence statement 7: Perceived barriers – Limits of adult responsibilities***

7a. Eight study reports of qualitative research discuss the limitations of parental responsibility for protecting children from sun exposure (Geller et al, 2008 [-]; Gillespie et al 1993[-]; Glanz et al, 1999 [+]; Glanz et al, 2008 [+]; Lupton & Gaffney, 2006 [+]; Paul et al 2003 [-]; Shoveller et al 2003 [++] and Young et al, 2005 [+]).

7b. Four study report discuss the responsibility of parents for their children's safe sun behaviour (Geller et al, 2008; Glanz et al, 1999; Glanz et al, 2008 and Young et al, 2005). This responsibility may be limited by parents' failure to demonstrate sun-safe habits themselves (Glanz et al, 1999; Reeder et al 2000) due to ambivalence about their own desire for tanned skin (Young et al, 2005). In addition, parents aren't always with their children to ensure safe-sun behaviour (Glanz et al 2008).

7c. Five study reports note that the transition from child to adolescent is marked by increasing independence, or rebellion, and that this may have negative effects on safe sun behaviour (Gillespie et al 1993; Lupton & Gaffney, 2006; Paul et al 2003; Shoveller et al 2003 and Young et al, 2005).

7d. One study suggests that there are a number of practical barriers to teachers' involvement in protecting children from the sun at school, such as concern about allergies to sunscreen and time (Geller et al 2008).

***Evidence statement 8: Perceived barriers – Perceptions of being outdoors***

8a. "Incidental tanning", obtained by simply being outdoors, was seen positively in seven study reports of qualitative research, for both children and adults (Gebert et al 1996 [+]; Gillespie et al, 1996 [-]; Glanz et al 1999 [+]; Goodlad et al, 1995 [-]; Lutpon & Gaffney, 2006 [+]; Reeder et al, 2000 [-]; Shoveller et al, 2003 [++]).

8b. Such attitudes to this incidental sun exposure, makes sunscreen use less likely on overcast days (Gebert et al 1996), in the winter (Gillespie et al, 1996, Australia; Glanz et al 1999, Hawaii), and for children when going out to play somewhere other than the beach (Glanz et al 1999) or for a shorter time than the whole day (Gillespie et

al,1999). People in the UK may be more likely to use sunscreen on holiday abroad than when at home (Goodlad et al, 1995).

***Evidence statement 9: Cues to action***

9a. Eleven study reports of qualitative research discuss people's cues to protective action against UV exposure (Gerbert et al, 1996 [+]; Gillespie et al, 1993 [-]; Glanz et al, 1999 [+]; Glanz et al, 2008 [+]; Goodlad et al, 1995 [-]; Lupton & Gaffney, 1995 [+]; Paul et al, 2003 [-]; Reeder et al, 2000 [-]; Tones & Smith, 1995 [-]; Wright & Bramwell, 2001 [-] and Young et al, 2005 [+]).

9b. These include the positive influence of parents and other adults for younger children (Gillespie et al, 1993 and Glanz et al, 1999) and peers for older children (Gillespie et al 1993), knowing someone who has had skin cancer (Gerbert et al, 1996; Gillespie et al 1993; Goodlad et al, 1995 and Young et al, 2005), and media campaigns (Gerbert et al, 1996; Gillespie et al, 1993; Glanz et al, 2008; Goodlad et al, 1995; Lupton & Gaffney, 1995; Paul et al, 2003; Reeder et al, 2000; Tones & Smith, 1995 and Wright & Bramwell, 2001).

9c. Media campaigns need to engage younger children (Goodlad et al, 1995; Lupton & Gaffney, 2006 and Paul et al, 2003) whilst not alienating older children (Lupton & Gaffney, 2006 and Paul et al, 2003), it is also suggested that they need to change regularly to maintain their impact (Lupton & Gaffney, 1995) and that shock images may appeal to older boys (Paul et al, 2003).

***Evidence statement 10: Self efficacy***

10a. Two study reports of UK based qualitative research address self-efficacy in skin cancer prevention with participants reporting examining themselves for signs of skin cancer (Carter 1997 [+] and Wright & Bramwell, 2001 [-]). Skin cancer is understood as largely preventable, and identifiable early, by those taking personal responsibility for their skin through self-surveillance and personal responsibility (Carter, 1997).

***Evidence statement 11: Skin cancer prevention policy***

11a. One qualitative study uses the analytic constructs of framing and narrative to understand the differences in the construction of skin cancer public health policy in

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|---|
| Australia, Canada and England (Garvin & Eyles, 2001 [++]). While skin cancer is conceived as a growing public health issue in England, public health messages have been focussed around expectations of reasonable protective factors and moderate UV exposure since the population is not considered sensitised to skin cancer and does not want to hear messages that promote avoiding the sun. |
| ***Evidence statement 12: Communicating skin cancer prevention messages*** |
| 12a. One qualitative study uses cognitive interviewing to refine the way questions were asked for a survey tool (Glanz et al, 2008 [+]), and the capacity for misunderstanding that it demonstrates underlines the importance of piloting any information material aimed at primary prevention of skin cancer with target groups |

## 1.5. Conclusion

Information campaigns to prevent the first occurrence of skin cancer may be enhanced by taking into consideration public understandings about it. This systematic review and synthesis of qualitative research suggests that people generally perceive their susceptibility to skin cancer, and its severity, as low. While the benefits of adopting protective behaviours in terms of reducing skin cancer risk are often recognised, these can be offset by the perceived benefits of having a tan and a number of practical and social barriers to adopting safer behaviour in relation to UV exposure. Peers, parents and media messages may act as positive cues to action that encourage safer behaviour, and people have a high sense of self-efficacy in terms of their understandings of skin cancer as both preventable and detectable through personal responsibility for behaviour and self-monitoring.

# 2. Aims and Background

## 2.1. Objectives and Rationale

This is the second review produced for the CPHE at NICE about providing public information to prevent skin cancer. The first, comprising a review of the evidence of effectiveness and cost-effectiveness, were produced by our collaborators at WMHTAC.

The aim of the project overall is to understand how to provide effective and cost-effective information to public about how to prevent a first occurrence of skin cancer. This report systematically reviews and synthesises relevant qualitative research to inform this topic.

## 2.2. Review Questions

Two primary research questions informed this evidence review:

1. What factors help to convey information to prevent the first occurrence of skin cancer attributable to UV exposure?

2. What factors hinder the communication of primary prevention messages?

In addition three secondary considerations were also examined:

i. Any environmental, social and cultural factors (covering financial/human resource factors) that prevent or support the uptake of the information.

ii. Availability and accessibility for different populations.

iii. Views about the content of information provided or the way in which it is conveyed.

In order to address these questions, two key types of outcomes were sought in the identified literature from the start, although it was understood that other important areas might emerge through the process of reviewing the evidence:

Views and experiences of those planning and delivering prevention messages on the barriers and facilitators to practice and on how to overcome the barriers.

The public's views and experiences of what prevents them from acting on prevention information – and on how to overcome those barriers.

# 3. Methods

## 3.1. Identification of evidence

### 3.1.1. Databases searched

Our primary method of identifying evidence was through searches of the following electronic databases: MEDLINE (including MEDLINE in process), EMBASE, The Cochrane Library, PsycINFO, ASSIA, CINAHL, and HMIC. Search terms consisted of a combination of thesaurus and text-word terms that combined terms associated with skin cancer and terms associated with the provision of public information. A qualitative studies filter was then added to the searches along with a date restriction from 1990-current and an English language publications limit. For additional information on the strategy, interfaces, and restrictions utilised please see Appendix 2.

Titles in the reference lists of all study reports included in the review were also checked for possible relevant reports not identified through the database searches.

In addition, the team from WMHTAC also tagged any studies thought to contain primary qualitative research or reviews of qualitative research that were identified through their searches of e-databases and websites for effectiveness and cost-effectiveness studies.

### 3.1.2. Inclusion of relevant evidence

#### 3.1.2.1. Inclusion criteria

**Populations**

Everyone

**Interventions**

Universal and targeted interventions aiming at primary prevention of skin cancer including:

- One-to-one or group-based verbal advice (with or without use of information resources).
- Mass-media campaigns.
- Leaflets, other printed information, including posters, and teaching resources.
- New media: the Internet (including social networking sites), e-media and text messaging.

### Settings

All – including the NHS, schools and workplaces etc, delivered by a range of people (such as general practitioners, practice nurses, pharmacists, early childhood services, and teachers).

### Locations

Developed/OECD countries (See Appendix 3 for details)

### Time period

1990 onwards.

### Study design

Systematic reviews of qualitative research which use a recognised, structured approach to identifying and synthesising studies (including, but not limited to, meta-ethnography, meta-study, meta-synthesis, narrative synthesis, etc). The main aim of searching for systematic reviews is to identify primary studies. Screening procedures are outlined in Section 3.1.2.3.

Primary qualitative research designs using recognised methods of data collection and analysis (including, but not limited to, observational methods, interviews and focus groups for the former and grounded theory, thematic analysis, hermeneutic phenomenological analysis, discourse analysis etc. for the latter.)

#### 3.1.2.2. Exclusion criteria

### Interventions

- Secondary prevention (activities that aim to prevent a re-occurrence of skin cancer)
- Primary prevention combining information provision with another type of intervention (such as changes to the built environment), where the outcomes related to information provision cannot be disaggregated from the other intervention/s.
- Provision of sun protection, for example, protective clothing or sunscreen (for outdoor workers), or structural changes to the environment (to provide areas of shade, for example, in public spaces or school grounds).
- Policy, legislative or fiscal changes. For example, raising the minimum age of sunbed use to 18 years, removing unsupervised and coin-operated sunbed facilities or reducing VAT on sunscreen products.
- Local, regional or national skin cancer screening programmes which solely aim to detect the occurrence of skin cancer or activities to assess its incidence among specific groups.
- Assessment of the accuracy effective information resources.
- Clinical diagnosis, treatment and management of skin cancer.

### Locations

Developing or non-OECD countries.

### Study types

Studies which describe the relationship between sun exposure and skin cancer and health or the incidence of skin cancer (i.e. correlate studies or non-evaluative studies of an intervention).

Studies that deal solely with the clinical diagnosis, treatment and management of skin cancer.

Dissertations/thesis, books and book chapters.

### Language

Non-English language studies.

#### 3.1.2.3. Screening

Studies identified through the searches were uploaded into RefMan and all titles and abstracts (where available) were screened by one of two reviewers independently. A predefined checklist (see Appendix 4) was used to assess adherence to the inclusion criteria. The title and abstracts of twenty percent of the hits were screened by a second reviewer (MP). Where studies appeared to meet the inclusion criteria, full text copies were obtained.

Full text study reports were checked for inclusion by two reviewers independently (RG and MP) and any disagreements resolved by discussion. The checklist used is shown in Appendix 4. The content of study reports was assessed at the full text phase. We included study reports that did not directly relate to a particular skin cancer prevention campaign, contrary to the original plan. This was for several reasons. Few study reports were identified that relate directly to a specific skin cancer prevention information source and of these, even fewer were process or outcome evaluations rather than formative evaluations. No effectiveness or cost-effectiveness data that could be included in the WMHTAC reviews was identified for any of the information campaigns for which there was qualitative research. This limits the potential benefits of such as restriction, which is the potential mapping of elements that might be related to programme success or failure. Within all the studies, some findings related to generally to attitudes to, and behaviours about, UV exposure generally, making the exclusion of study reports that focus on this seem illogical. Finally, the research questions, particularly question 2 relating to factors that hinder communication messages, are usefully informed by the information about attitudes and beliefs about UV exposure described in studies not focussed on a specific information campaign.

Where systematic reviews were identified, the lists of included and excluded studies were scanned to identify potentially relevant studies, the title and abstract of which

were screened online, with full text study reports screened online or as a hard copy, using the same checklists and procedures as above.

## 3.2. Methods of analysis/synthesis

### 3.2.1. Quality assessment

All included studies were assessed for quality using the criteria shown in Appendix 5: this was used as an alternative to that in the NICE Methods Guidance document since this is currently under review and the review team prefer it. Assessment was undertaken by one member of the team and checked by another. We resolved any disagreements by discussion.

### 3.2.2. Data extraction

For each included study report, information about the methods and population studied was extracted into an evidence table. In addition, findings, in the form of key themes, concepts and metaphors, were extracted for each study report by one reviewer (MP or RG) (see Appendix 6). At the extraction phase there was no attempt to separate out those themes that might be deemed directly relevant to the research questions and key outcomes, to avoid prematurely excluding details that might later be revealed as important.

In addition, general statements about possible applicability of the study findings to a UK setting were made based on the location and date of the studies that were conducted.

### 3.2.3. Data analysis and synthesis

Two reviewers read and re-read the extracted findings shown in the evidence tables (Appendix 6) and developed a coding frame to identify key themes across the included studies. A number of the studies used the Health Belief Model as an explanatory framework through which to interpret their findings. Developed in the 1950s, the Health Belief Model (Table 1) is a widely applied conceptual framework for understanding health behaviours, initially comprising the first four of elements, while

"cues to action" and "self-efficacy" have been added more recently as mechanisms to motivate health behaviours.

Through initial data extraction and readings of the study reports and findings this seemed to be a coherent framework to interpret and synthesise findings from most of the included studies. We therefore used this as the starting point for developing codes to analyse the findings and as a structure to express the synthesis in Chapter 5. Through repeated readings of the study findings and consultation between the two reviewers (RG and MP) themes were identified that contributed to the concepts of the Health Belief Model shown in Table 1. Extracted findings were coded using this framework, and similar codes drawn together in a narrative which synthesised the study findings.

**Table 1 The Health Belief Model**

| Concept | Definition | Application |
|---|---|---|
| Perceived Susceptibility | One's opinion of chances of getting a condition | Define population(s) at risk, risk levels; personalize risk based on a person's features or behavior; heighten perceived susceptibility if too low. |
| Perceived Severity | One's opinion of how serious a condition and its consequences are | Specify consequences of the risk and the condition |
| Perceived Benefits | One's belief in the efficacy of the advised action to reduce risk or seriousness of impact | Define action to take; how, where, when; clarify the positive effects to be expected. |
| Perceived Barriers | One's opinion of the tangible and psychological costs of the advised action | Identify and reduce barriers through reassurance, incentives, assistance. |
| Cues to Action | Strategies to activate "readiness" | Provide how-to information, promote awareness, reminders. |
| Self-Efficacy | Confidence in one's ability to take action | Provide training, guidance in performing action. |

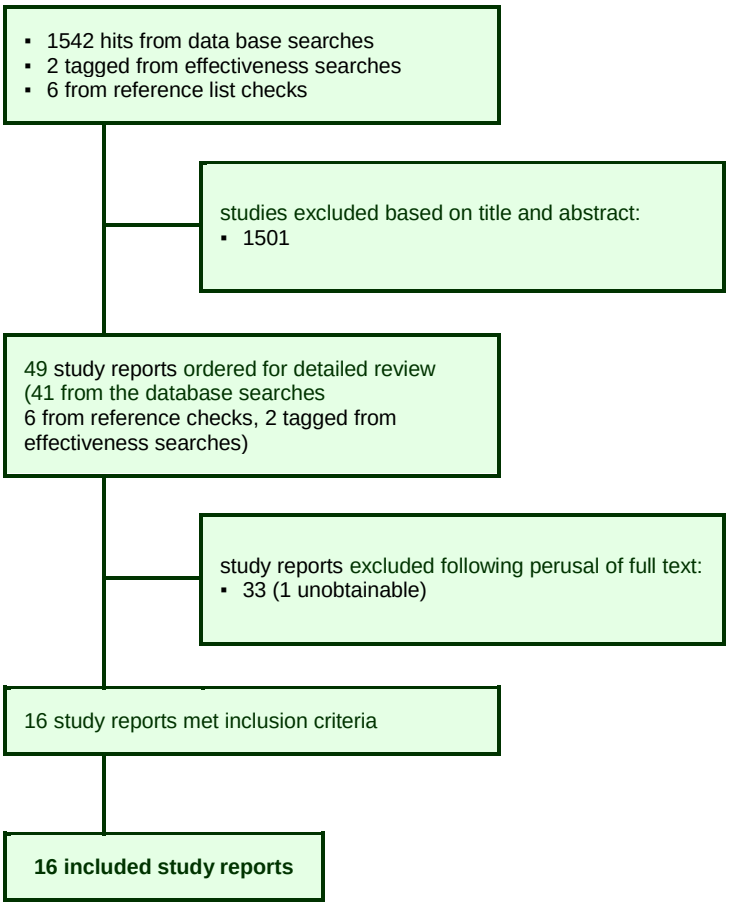
Source: (National Cancer Institute 2005)

# 4. Summary of included studies

## 4.1. Identified studies

Process of study identification is shown in **FIGURE 1**.

***FIGURE 1*** *Review flowchart*




References to studies excluded at the full text stage, together with their abstracts, are shown in Appendix 7. No systematic reviews of qualitative research were identified.

## 4.2. Included studies

### 4.2.1. Study characteristics

A total of sixteen study reports, about 15 projects, were included in the review. Two study reports were based on the same interview data (Shoveller et al. 2003;Young et al. 2005). Summary details of all the included study reports are provided in Table 2.

Five studies were from the UK (Carter 1997;Goodlad et al. 1995;Murray & Turner 2004;Tones & Smith 1995;Wright & Bramwell 2001), four studies were from the USA ((Geller et al. 2008) (Gerbert et al. 1996) (Glanz et al. 1999) (Glanz et al. 2008), three were Australian (Gillespie et al. 1993) (Lupton & Gaffney 1996) (Paul et al. 2003), and there was one each from New Zealand (Reeder et al. 2000) and Canada. This Canadian study resulted in two study reports (Shoveller et al, 2003 and Young et al, 2005). One study report compares policies in Australia, Canada and England (Garvin & Eyles 2001).

Six included study reports relate directly to public health information campaigns addressing skin cancer and UV exposure. Two of these relate to Australian interventions (Paul et al, 2003 on “Slip Slap Slop” and Lupton & Gaffney, 1996 on “Me no Fry”). Two relate to the same commercial shown on Yorkshire television in the UK – one of which was a part of a formative evaluation (Goodlad et al, 1995), and one part of the final evaluation (Tones & Smith, 1995). One study report was part of a formative evaluation for “Sun Smart” in Hawaii, USA (Glanz et al 1999). Finally, one study compared the framing and narrative of sun safety campaigns generally in Australia, Canada and England (Garvin & Eyles, 2001).

Ten included study reports are not directly related to a public health information campaign addressing skin cancer and UV exposure. These related to different populations, with attitudes to skin cancer, tanning and the sun explored among adults, older people, adolescents, parents, teachers and youth workers and children. The attitudes of sun bed users were specifically sought in one study report (Murray & Turner, 2004).

One study report was aimed at developing a better tool for surveying people about tanning habits (Glanz et al 2008). One study report assessed whether elementary

schools in the USA had a policy about sun protection, and reasons for this, through interviews with staff (Geller et al, 2008).

The original protocol said that we would exclude dissertations/thesis, books and book chapters. In practice, however, we did not exclude these study types where they met all other inclusion criteria. This meant that one study written up as a book chapter was included (Carter, 1997) and two pieces of grey literature about a media campaign for Yorkshire TV were included (Goodlad et al, 1995 and Tones & Smith, 1995). All three study reports are based in the UK and we believe that their exclusion would have unnecessarily restricted pertinent literature from the review. No other study reports of these study types were identified.

**Table 2 Summary of identified study reports**

| | Aim | Method and population | Location | Programme |
|---|---|---|---|---|
| Carter, 1997 | To explore the social processes that informs the apparently contradictory understandings of tans as "good health" and as risky. | Interviews and FGDs with adults who travel abroad for leisure. | Glasgow and surroundings, Scotland, UK | None |
| Garvin & Eyles, 2001 | To examine national differences in public health policies. | Comparative framing and narrative analysis of programmes. | Australia, Canada & England | "Sun Safety" generally. |
| Geller et al, 2008 | To assess if schools had sun protection policies | Interviews & FGDs with principals, nurses, Parent/teacher associations and assessment of school documents | Elementary schools in Massachusetts, USA | Existence of school based protection policies are investigated |
| Gerbert et al, 1996 | To assess people's attitudes and beliefs about skin cancer | FGDs with adults who protect their children form the sun and with those who don't. | California, USA | None |
| Gillespie et al, 1993 | To describe the first phase of a larger project designed to develop and evaluate a school based sun protection initiative | FGDs with students in primary and secondary schools | Australia | Informed a school based programme |
| Glanz et al 1999 | Formative research to develop a HP campaign – to learn what children know and thought about skin cancer & sun protection; to get ideas from them about the appeal and feasibility of various materials and strategies. | FGDs and interviews with children, parents and recreation staff | Hawaii, USA | SunSmart (formative) |
| Glanz et al, 2008 | To develop a questionnaire to measure sun protection habits. | Cognitive interviews - testing existing survey questions through adults "thinking aloud" as they completed it to alter wording | 9 sites in the USA | None – its about refining a survey tool |

| | Aim | Method and population | Location | Programme |
|---|---|---|---|---|
| Goodlad et al, 1995 | To gather background information of KAP about sun exposure and protection, to examine their attitudes to mass media as a source of information and to examine their responses to story boards. | FGDs with mothers of at least 2 children | Doncaster, Leeds, Hull, Sheffield, UK | Formative for a Yorkshire TV commercial. |
| Lupton & Gaffney, 1996 | To identify discourses and practices about sun protection and tanning among young people. | FGDs with secondary school students | Australia | "Me no fry" |
| Murray & Turner, 2004 | To explore the reasoning behind sun bed use | Interviews with adult sun bed users | Merseyside, UK | None |
| Paul et al, 2003 | Exploration of perceptions of teenagers regarding sun protection media messages. | FGDs with secondary school students | Australia | Slip slap slop |
| Reeder et al, 2000 | To investigate parental opinions, understandings and practices concerning sun protection for young children | FGD with parents | New Zealand | None |
| Shoveller et al, 2003(Shoveller et al. 2003) | To describe how adolescents make decisions about sunbathing during transition from childhood to adolescence. | Interviews with adolescents and parents | Canada | None |
| Tones & Smith, 1995(Tones & Smith 1995) | To assess the impact of a TV commercial about protecting children from the sun. | Mixed methods – survey and structured interviews adults (92% women). | 4 cities in Yorkshire, UK | A 30 second commercial shown on Yorkshire TV in May 1995 |
| Wright & Bramwell, 2001 | To explore health beliefs of older people in relation to skin cancer | Interviews with adults >55 yr old | Wales, UK | None |
| Young et al, 2005 | To explore the characteristics of family sun-protection projects as they occur in families with adolescents and any differences across families, | Same as Shoveller et al 2003 | Canada | None |

FGDs = Focus group discussions

## 4.3. Study methodology and quality appraisal

Methodological details are summarised in Table 3. Nine study reports used focus groups to collect data, three of which also used interviews. Five used interviews alone (one of which used cognitive interviewing). One used interviews and open ended question on a survey (mixed methods). The final study used framing and narrative analysis to compare policies for sun safety in three countries.

Only one study spoke to those involved in promoting safe sun behaviour - this is the study undertaking a comparative policy assessment between skin cancer prevention massages in the UK, Canada and Australia (Garvin & Eyles, 2001). The remaining studies spoke to members of the public about sun safety behaviour and skin cancer prevention. Studies were among children and adolescents aged 5-16 (Gillespie et al, 1993), adolescents aged 11-17 (Lupton & Gaffney, 1996; Paul et al 2003), adults aged 18-40 (Carter 1997; Gerbert et al, 1996; Reeder et al, 2000; Tones et al, 2001 and Murray and Turner, 2004 – the latter were all sunbed users), parents and their adolescent children (Shoveller et al 2001 and Young et al 2005), parents (Goodlad et al, 1995), school staff (Geller et al, 2008) and older adults, aged 55 and older (Wright & Bramwell, 2001). Finally, one study interviewed children, their parents and recreation staff (Glanz et al, 1999).

Most did not use a stated theoretical approach or conceptual framework. One study used the constructs of framing and narrative to inform the analysis (Garvin & Eyles, 2001); four used the Health Belief Model to structure the investigation or inform the analysis (Gerbert et al, 1996; Gillespie et al 1993; Glanz et al, 1999 and Wright & Bramwell, 2001), one supplemented this with Social Cognitive Theory (Glanz et al, 1999). One study used social learning theory (Tones and Smith, 1995). One study produced a Grounded Theory, although this does not appear to inform sampling procedures (Shoveller et al, 2003). One study used interpretive phenomenological analysis (Murray and Turner, 2004). For the most part, analysis was thematic and most studies present descriptive rather than explanatory findings.

**Table 3: Methodological details of included studies**

| Author & location | Theoretical approach | Sample | Type of sample | Analytic process |
|---|---|---|---|---|
| Carter, 1997<br>Scotland, UK | None stated – but analysis informed by theories of risk and consumerism, and Foucauldian concept of the disciplinary gaze. | 26 Interviews (15 men, 11 women aged 20-35)<br>2 focus groups (2 men, 7 women; 3 men, 4 women) | Convenience.<br>Friendship groups. | Thematic analysis |
| Garvin & Eyles, 2001<br>Australia, Canada and UK | Analytic constructs of framing and narrative used to understand the differences in the construction of skin cancer public health policy | 15 interviews with health promotion, epidemiologists and dermatologists. | Continuous snowball sampling using the starting point of participation in international conferences on skin cancer in 1996. | Data initially coded by date to establish a flow of events up to existing policies and create a case record, consisting of timelines that were cross checked against materials to verify the date and the activity.<br>Framing locations (*communicators, text, receivers and culture*) then identified & labelled in the interviews. These were compared against time lines for each country, and then compared across countries. |
| Geller et al, 2008<br>Massachusetts, USA | None stated | 61 interviews among school staff (9 superintendents, 18 principals, 18 school nurses, 16 PTO presidents) | Schools - quota - 381 districts put into 9 categories based on student enrolment and income, from each of which one school participated. Not clear how people were selected. | Identification of broad themes, then systematic line-by line coding "based on an initial theory driven code list". (Not clear to what this latter refers.) |

| Author & location | Theoretical approach | Sample | Type of sample | Analytic process |
|---|---|---|---|---|
| Gerbert et al, 1996<br>San Francisco, USA | Health Belief Model | 2 focus groups with16 university students<br>(One with 6 students categorised as having high-concern about skin cancer, and one with10 having low concern) | Convenience (Screening questionnaire allowed participants to be categorised into "low concern" group (who did not practice sun protection) and a high concern group who did) | Transcriptions coded independently by the team for attitudes, beliefs and practices. These were then discussed and ideas generated as a group to develop thematic categories. |
| Gillespie et al, 1993<br>Australia | Health belief model (HBM) informs the questions and analytic framework | 36 focus groups with children aged 5-16<br>(6 focus groups conducted with children from each of the school years, no more than 10 children per group) | Schools chosen to represent each of the 12 Queensland education regions, equally across coastal and inland areas. Children were randomly selected from class lists. | Unclear, probably thematic.<br>Data analysed by age – Australian primary grades 3-5, transition grades 7&8, secondary grades 9-11 |
| Glanz et al, 1999<br>Hawaii, USA | Social Cognitive Theory (SCT) and Health Belief Model (HBM) provided the framework for the research overall | 216 children in 12 groups of 8-28.<br>15 parents in 5 focus groups, plus 3 interviews<br>27 recreation staff in 3 focus groups of 8-11. | Purposive samples in terms of ethnicity, rural or urban locations and public or private schools. | Thematic analysis |
| Glanz et al, 2008<br>9 locations in the USA | Analysis informed by cognitive interviewing. | 81 one-to-one cognitive interviews<br>(72 adults, 9 adolescents) | Mixed convenience/ purposive | Thematic analysis |
| Goodlad et al, 1995<br>Yorkshire, UK | None stated | 8 focus groups - number of participants not stated (all with mothers (age 21-40) of at least 2 children - at least one aged <10) | Mixed convenience/ quota in relation to working- and middle-class participants. | No details provided |
| Lupton & Gaffney, 1996<br>Australia | None explicitly stated, but discourse considered key. | 98 adolescents in 12 focus groups, 8-9 participants in each (50 girls, 48 boys; 50 aged 11-13, 48 aged 14-16) | Not stated | Discourse analysis |

| Author & location | Theoretical approach | Sample | Type of sample | Analytic process |
|---|---|---|---|---|
| Murray & Turner, 2004<br>Merseyside, UK | Interpretive Phenomenological Analysis | 18 semi-structured interviews with sunbed users (9 men 9 women; age 18-32) | Self referral in response to information sheets left at salons | Thematic ('from a psychological perspective'), with a view to developing 'superordinate concepts' |
| Paul et al, 2003<br>Australia | None stated | 95 adolescents in 17 single sex focus groups with adolescents (aged 12-17) | Convenience | Thematic |
| Reeder et al, 2000<br>New Zealand | None stated | 12 in 2 focus groups (11 women; 1 man; aged 25-40 years) | Convenience | Unclear. |
| Shoveller et al, 2003<br>Canada | Grounded Theory | 20 semi-structured interviews with parent and adolescent children together (adolescents age 12-16), parents age 34-50) | Purposive | Constant comparative method. |
| Tones & Smith, 1995<br>Yorkshire, UK | Social Learning Theory | Postal survey (197 participants, 92% female) | Convenience (All enquirers who phoned the 'Health Box' were sent the survey) | No details provided |
| Wright & Bramwell, 2001<br>UK | Health Belief Model | 20 semi-structured interviews (male n=10, female n=10; age range 58-87) | Convenience | Thematic, based upon pre-defined categories of the Health Belief Model |

| Author & location | Theoretical approach | Sample | Type of sample | Analytic process |
|---|---|---|---|---|
| Young et al, 2005<br><br>Canada | Action Theory framework informed analysis | 10 semi-structured interviews with parent and child together<br>(20 participants – 10 adolescents 10 parents) | Random sample from original purposive sample (Shoveller et al, 2003) | Interview transcripts were 'reviewed and coded [collaboratively between 2 of the study authors] following the principles of qualitative analysis within an action theory framework which focused on the parent-adolescent dyad and aimed to identify, describe and 'type' family projects related to sun protection. |

Results of the quality appraisal are shown in Table 4. As requested, we also gave an indication of overall quality, "++", "+" or "-", based on the quality assessment tool and a critical reading of the report.

Reasons for rating studies as "-" included lack of detail about the processes of data collection and analysis (for example, rudimentary or no details provided to describe how conceptual themes were developed), lack of information or justification for sampling procedures, and limited analyses. It should be noted that such lack of detail may only relate to the method of reporting, rather than actual study conduct.

The majority of study designs were appropriate for investigating the research questions stated, although the lack of detail in reporting meant that it was often not possible to assess whether specific quality criteria had been met. For example, five study reports did not provide sufficient information to assess whether the sample was adequate to explore the range of subjects and settings, and seven did not provide sufficient information to assess whether data collection had been rigorously conducted. Nine of the sixteen study reports did not report how ethical issues had been considered or addressed.

Two studies were designated "++" (Garvin & Eyles, 2001; Shoveller et al, 2003), seven "+" (Carter, 1997; Gerbert et al, 1996; Glanz et al, 1999; Glanz et al, 2008; Lupton & Gaffney, 1996; Murray & Turner, 2004; Young et al, 2005), and the remaining seven "–" (Geller et al, 2008; Gillespie et al, 1993; Goodlad et al, 1995; Paul et al, 2003; Reeder et al, 2000; Tones & Smith, 1995; Wright & Bramwell, 2001).

**Table 4: Quality appraisal of included studies**

| | Overall score | Is the research question clear? | Perspective of author clear? | Perspective influenced the study design? | Is the study design appropriate? | Is the context adequately described? | Sample adequate to explore range of subjects/settings? | Sample drawn from appropriate population? | Data collection adequately described? | Data collection rigorously conducted? | Data analysis rigorously conducted? | Findings substantiated/limitations considered? | Claims to generalisibility follow from data? | Ethical issues addressed? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Carter, 1997 | + | Y | N | NA | Y | CT | Y | CT | Y | CT | N | N | Y | Y |
| Garvin & Eyles, 2001 | ++ | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | NA | CT |
| Geller et al, 2008 | - | Y | N | NA | Y | N | Y | Y | Y | Y | CT | N | NA | Y |
| Gerbert et al, 1996 | + | Y | N | NA | Y | Y | Y | Y | Y | Y | Y | N | N | Y |
| Gillespie et al, 1993 | - | N | N | NA | CT | N | Y | Y | N | CT | N | N | NA | N |
| Glanz et al, 1999 | + | Y | Y | Y | Y | Y | Y | Y | Y | CT | Y[a] | CT | Y | Y |
| Glanz et al, 2008 | + | Y | Y | Y | Y | Y | N | Y | Y | CT | CT | N | Y | Y |
| Goodlad et al, 1995 | - | Y | N | N | Y | CT | CT | CT | N | CT | N | CT | CT | CT |
| Lupton & Gaffney, 1996 | + | Y | Y | Y | Y | Y | CT | Y | Y | Y | CT | CT | CT | CT |
| Murray & Turner, 2004 | + | Y | Y | Y | Y | N | CT | Y | Y | Y | Y | CT | CT | CT |

| | Overall score | Is the research question clear? | Perspective of author clear? | Perspective influenced the study design? | Is the study design appropriate? | Is the context adequately described? | Sample adequate to explore range of subjects/settings? | Sample drawn from appropriate population? | Data collection adequately described? | Data collection rigorously conducted? | Data analysis rigorously conducted? | Findings substantiated/limitations considered? | Claims to generalisibility follow from data? | Ethical issues addressed? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Paul et al, 2003 | - | Y | N | CT | Y | N | CT | Y | N | CT | CT | CT | Y | CT |
| Reeder et al, 2000 | - | Y | N | CT | Y | CT | N | Y | N | CT | CT | CT | N | CT |
| Shoveller et al, 2003 | ++ | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Tones & Smith, 1995 | - | N | Y | N | CT | N | N[b] | CT | N | N[c] | N | CT | NA | CT |
| Wright & Bramwell, 2001 | - | Y | Y | Y | Y | N | N | CT | N | N | CT | CT | Y | CT |
| Young et al, 2005 | + | Y | Y | Y | Y | Y | CT | Y | Y | Y | CT | CT | CT | Y |

Key: Y = Yes N = No CT = Can't tell NA = Not applicable

[a] Yes in the sense that multiple coders were used, but no because some details are unclear
[b] Unclear report write-up, e.g. difficult to find out number of participants, how they were recruited, and how the recruitment of these participants is related to the larger 'audience survey'
[c] Significant doubts about research methods used, e.g. surveys were returned by people (n=53) who had not seen the TV advertisements – although these were excluded from the analysis, it is unclear how it is known that others who had completed surveys had seen the advertisements or were not simply completing them for entry into the prize draw ( for a Center Parcs holiday)

## 4.4. Applicability

Five study reports were from the UK (Carter et al 1997; Goodlad et al 1995; Murray & Turner, 2004; Tones & Smith, 1995 and Wright & Bramwell, 2001), and findings from these studies are likely to be directly applicable to the UK context. It should be noted, however, that three studies are over ten years old and cultural attitudes and norms about sun protection may have altered over this time.

Three studies are Australian (Gillespie et al 1993; Lupton & Gaffney 1996 and Paul et al, 2003). Findings from these studies are likely to be partially applicable to the UK. Whilst it is possible that attitudes to the tan share some similarities, the combination of such a hot climate but a large European population make risks of skin cancer much higher. In addition, there are more legislative controls in Australia, especially about protection of young children.

Four studies were from the USA – Hawaii, California, Massachusetts and multiple locations (Geller et al, 2008; Gerbert et al 1996; Glanz et al, 1999 and Glanz et al, 2008), one from New Zealand (Reeder et al, 2000) and one study from Canada (resulting in two study reports by Shoveller et al, 2003; Young et al 2005). Again, these findings may be partially applicable to the UK situation, with some similarity of populations leading to similar attitudes, but different climates affecting level of risk.

The study report which compares sun safety policies in Australia, Canada and England may provide some insights into the different attitudes between these countries although this study is based on policies from the 1990s and so may be dated (Garvin & Eyles, 2001).

Finally, studies look at different age groups and these should be considered in judging the applicability of any particular findings.

These should be regarded as suggestions about possible influences on the applicability of studies to the current UK situation, and all are matters of judgement. Particular findings from any study may also vary in their applicability, for example, findings about the concerns of parents may be thought common across several countries, whilst findings from the same study relating to a particular type of school management, may not.

# 5. Study findings

We used the framework of the Health Belief Model to synthesise the findings of the included studies. The Health Belief Model was used as a conceptual framework for analysis by four study reports included in the review (Gerbert et al, 1996; Gillespie et al, 1993; Glanz et al 1999 and Wright & Bramwell, 2001). Within the core model areas - of perceived susceptibility to skin cancer, perceived severity of skin cancer, perceived benefits of skin cancer protection behaviour, perceived barriers to sun safety behaviour and cues to action to take preventative action against skin cancer - we developed more detailed codes through repeated readings of the study findings. These codes are shown in Table 5. Perhaps predictably, given the nature of the identified research, most information was found that related to perceived barriers to adopting safe sun behaviour.

Two studies have a different focus and do not fit well into the Health Belief Model framework for synthesis. These studies compare the sun safety policies of the UK, Canada and Australia (Garvin & Eyles, 2001) or use cognitive interviewing to assess the suitability of wording for a survey about sun safety behaviour (Glanz et al, 2008). The former did not contribute at all to the synthesised findings, while the latter did contribute but some of the findings are lost if this is the only way in which the information is analysed. The findings of these two studies are therefore summarised separately below in Section 5.7 while 15 study reports contribute to the synthesis in this chapter.

**Table 5 Health Belief Model with Extended Analytic Themes**

| Health Belief Model category | Contributing themes | Subthemes |
|---|---|---|
| Perceived susceptibility | | |
| Perceived severity | Cancer vs aging | |
| Perceived benefits | | |
| Perceived barriers | Positive perceptions of a tan | Tans are healthy |
| | | Tans are attractive |
| | | Meanings of white skin |
| | | Tans signify a good holiday |
| | | Peers' views of tans |
| | Hassle of protection | Sunscreen |
| | | Hats |
| | | Long sleeves/ covering up |
| | Structural challenges | |
| | Adult responsibilities | Parents |
| | | School teachers |
| | | Teenagers vs younger children |
| | Being outdoors/ incidental tanning | |
| Cues to action | Knowing people with skin cancer | |
| | Media campaigns | |
| | Sources of encouragement | |
| Self-efficacy | | |

## 5.1. Perceived Susceptibility

Four studies discuss perceived susceptibility to skin cancer (Gillespie et al, 1993; Glanz et al, 1999; Reeder et al, 2000 and Wright & Bramwell, 2001).

Three studies, about different populations - children (up to 16 years old) and older adults (over 55 years), discuss low perceived susceptibility to skin cancer (Gillespie et al, 1993; Glanz et al, 1999 and Wright & Bramwell, 2001). Children saw skin cancer

as a problem encountered in adulthood with no relevance to them at present (Gillespie et al, 1993). Another study suggests that children felt they were at risk of getting sunburnt, but that this lasted for only a few days, without any further long-term repercussions (Glanz et al, 1999). Some older adults also did not acknowledge susceptibility to skin cancer, believing they had a low or non-existent risk because they did not smoke, had general good health, no family history of skin cancer or the because of the relatively low temperatures in the UK (Wright & Bramwell, 2001).

Three studies, among both children and adults, show the belief that fairer skinned people were most at risk with a darker skin colour seen as protective (Gillespie et al, 1993; Reeder et al, 2000 and Wright & Bramwell, 2001):

> *It's hard to get your head around if you're not personally at risk (participant, Reeder et al, 2000).*

| ***Evidence statement 1: Perceived susceptibility*** |
|---|
| 1a. Four study reports of qualitative research discuss perceived susceptibility to skin cancer (Gillespie et al, 1993 [-]; Glanz et al, 1999 [+]; Reeder et al, 2000 [-] and Wright & Bramwell, 2001 [-]). |
| 1b. Three studies (Gillespie et al, 1993; Glanz et al, 1999 and Wright & Bramwell, 2001) report low perceptions of susceptibility to skin cancer among children and older adults. |
| 1c. Three study reports, among both children and adults, show the belief that darker skin tones are protective against skin cancer. (Gillespie et al, 1993; Reeder et al, 2000 and Wright & Bramwell, 2001) |

## 5.2. Perceived Severity

Six studies discuss different populations' perceptions of the severity of skin cancer (Gerbert et al, 1996; Gillespie, 1993; Glanz et al 1999; Lupton & Gaffney, 2006; Murray & Turner, 2004 and Wright & Bramwell, 2001). In most cases perceived severity of sun exposure was low in children (Glanz et al 1999, USA; Gillespie, 1993,

USA), young adults (Gerbert et al, 1996, USA), older adults (Wright & Bramwell, 2001, UK) and sunbed users (Murray & Turner, 2004, UK).

Children didn't understood about skin cancer and perceived only immediate undesirable effects of sun exposure such as a headache and a general feeling of malaise or sunburn that affected them for only a few days (Glanz et al, 1999). In the same USA study, parents were unconcerned about development of skin cancer 'spots', believing that their surgical removal was always curative (Glanz et al, 1999).

One study spoke to university students who were categorised as having "low concern" or "high concern" about sun safety issues. "High concern" university students perceived greater risks from sun exposure. Those with low concern knew about the negative effects of excess sun exposure, but did not see this as serious:

> *I'll deal with it when it happens, you know, 50 years or so (participant, Gerbert et al, 1996).*

Active denial of skin cancer risk is reported in two UK based studies:

> *Well I mean, the obvious risk is skin cancer but I tend not to think about it, you just put it to the back of your mind and hope that you won't get it (female participant, sunbed user, Murray & Turner, 2004)*

> *Doesn't do any good thinking about it (participant, Wight & Bramwell, 2001)*

Sunbed users acknowledged they were placing themselves at risk by their behaviour but, like adolescents, believed the short-term benefits of tanned skin to outweigh the long-term risks (Gillespie et al, 1993 and Murray & Turner, 2004).

### 5.2.1. Cancer vs aging

Photo-aging was taken seriously by participants in four studies (Gerbert et al, 1996; Gillespie et al, 1993; Lupton & Gaffney, 2006 and Murray & Turner, 2004), although the concern was greater amongst female participants (Lupton & Gaffney, 2006 and Murray & Turner, 2004). In some cases, the risk of such damage was viewed as more "real" and serious than skin cancer (Gerbert et al 1993).

Two studies suggest targeting this concern about the effects of aging on appearance in sun safety campaigns to motivate behaviour change (Gerbert et al, 1996 and Gillespie et al 1993).

***Evidence statement 2: Perceived severity***

2a. Six study reports of qualitative research discuss perceptions of the severity of skin cancer and sun exposure (Gerbert et al, 1996 [+]; Gillespie, 1993 [-]; Glanz et al 1999 [+]; Lupton & Gaffney, 2006 [+]; Murray & Turner, 2004 [+] and Wright & Bramwell, 2001 [-]).

2b. Perceived severity of sun exposure was low in children (Glanz et al 1999; Gillespie, 1993), young adults (Gillespie, 1993), older adults (Wright & Bramwell, 2001) and sunbed users (Murray & Turner, 2004). Children were more aware of the perceived short term discomfort of sun exposure than long term risks (Glanz et al 1999). Studies in adults found skin cancer was thought to be easily cured (Glanz et al 1999), a possible future concern (Gillespie, 1993), something people preferred not to think about (Murray & Turner, 2004 and Wright & Bramwell, 2001) or outweighed by the short term benefits of a tan (Gillespie 1993 and Murray & Turner, 2004).

2c. Four study reports suggest that photo-aging was taken seriously by participants, especially women, (Gerbert et al, 1996; Gillespie et al, 1993; Lupton & Gaffney, 2006 and Murray & Turner, 2004), in one case suggesting that this was perceived as a more serious and real concern than skin cancer (Gerbert et al 1993).

## 5.3. Perceived Benefits

Eight study reports discuss the perceived benefits of sun protection behaviour (Carter, 1997; Gillespie et al, 1993; Glanz et al, 1999; Lupton & Gaffney 1996; Murray & Turner, 2004; Shoveller et al 2003; Tones et al, 1995 and Wright & Bramwell, 2001). In most cases this was related to understandings of the risks of sun exposure.

Two Australian studies report that children and adolescents were able to list the damaging effects of excess sun exposure, including skin cancer (Gillespie et al, 1993 among children aged 5-16 and Lupton & Gaffney, 2006 among those aged 11-16) and that they were aware of the benefits of limiting skin exposure to sunlight (Gillespie et

al, 1993). By contrast, Glanz et al (1999) reported that elementary children in the USA did not comprehend skin cancer or its associated risks. The 'Me No Fry' media campaign (Australia) had been seen by almost all of the participants (aged 11-16) in Lupton & Gaffney's study (2006), with the primary message regarding sun protection being understood as 'cover up' in order to avoid sun damage.

Parents understood the sun safety was important and that starting sun protection practices with children at a young age so as to cultivate the habit was advisable (Hawaii, USA Glanz et al, 1999). Parents, children, and recreation staff agreed that the use of sunscreen was the most important component of sun protection behaviour (Glanz et al, 1999).

Adult participants in Carter's Scottish study (1997) saw health education about sun protection as credible, and were easily able to repeat its advice about the benefits; however, their behaviour did not follow the advice. Carter suggests that their behaviour is influenced to a far greater degree by social expectations about tanning (see 5.4.1 about positive perceptions of tans). In contrast, some of the adult participants in Tones et al's Yorkshire study (1995) were keen to practice sun safety, but asked questions that indicated confusion over effective practices.

Older adults (aged over 55) varied significantly in their understanding of the causes of skin cancer. Whilst most identified sunlight or ultraviolet rays as the main cause of skin cancer, some had imprecise understandings of this link (for example, believing that sunbeds constituted a greater risk than 'ultraviolet light') or plainly erroneous beliefs (for example, believing that skin cancer was contagious, or caused by 'oriental food' or 'perfumed soap'. Wright & Bramwell, 2001).

Four study reports show inaccurate beliefs that a tan is protective of skin damage; among parents discussing their children in Hawaii; adolescents in Canada and adults in the UK (Glanz et al 1999; Murray & Turner, 2004; Shoveller et al 2003 and Tones et al, 1995). This was a justification for using a sun bed before going on holiday (Murray & Turner, 2004). Two study reports show that getting burnt was seen as the prelude to a deep tan (Carter 1997 and Lupton & Gaffney, 2006). Conversely, sunblock and high sun protection factor sunscreen was seen as preventing a desirable tan, leading to lower factors being used, or periods in the sun without any protection to permit a tan to develop (Lupton & Gaffney, 2006). These perceptions of a *tan* as beneficial in

protecting the skin against damage work against perceptions of sunscreen as protective, since the sunscreen is seen as preventing a dark tan which is seen as protective, as well as desirable (see also Section 5.4.1).

***Evidence statement 3: Perceived benefits***

3a. Eight study reports of qualitative research discuss the perceived benefits of sun protection behaviour (Carter, 1997 [+]; Gillespie et al, 1993 [-]; Glanz et al, 1999 [+]; Lupton & Gaffney 1996 [+]; Murray & Turner, 2004 [+]; Shoveller et al 2003 [++]; Tones et al, 1995 [-] and Wright & Bramwell, 2001 [-]).

3b. In two study reports, there was conflicting evidence about whether children were aware of the risk of skin cancer and so the benefits of sun safety behaviour (Gillespie et al, 1993 and Glanz et al, 1999). Parents and children recalled sun safety advice (Glanz et al, 1999 and Lupton & Gaffney, 2006) and parents were keen to start sun protection with their children when young (Glanz et al, 1999).

3c. One study report suggests that knowledge of the benefits of sun protection may not be translated into safe sun practices, as a tan is seen as socially beneficial (Carter, 1999).

3d. One study report found older adults may have misinformation about the causes of skin cancer, limiting their perceptions of the benefits of sun protection (Wright & Bramwell, 2001). In addition, four study reports revealed erroneous beliefs that getting a tan was protective of skin damage (Glanz et al 1999; Murray & Turner, 2004; Shoveller et al 2003 and Tones et al, 1995) and in two study reports, participants believed that getting burnt was the prelude to a deep tan, and that high protection sunscreen might prevent deep tanning (Carter 1997 and Lupton & Gaffney, 2006).

## 5.4. Perceived Barriers

Most of the reported findings of the included studies can be thought of in terms of perceived barriers to sun protection behaviour due to positive perceptions of tans,

hassle of following sun protection practices, structural barriers or the limits of adult responsibilities for their children. These have been divided into five key areas below:

- positive perceptions of a tan,
- the hassle of implementing protection,
- structural challenges to implementation in schools,
- limits of adult responsibilities,
- perceptions of being outdoors and incidental tanning.

There are also sub-themes within these key themes about barriers to safe sun behaviour.

### 5.4.1. Positive perceptions of a tan

#### 5.4.1.1. Tans are healthy

Seven studies report that tanned people are seen as healthy by children, adolescents and adults (Carter, 1997; Gerbert et al, 1996; Goodlad et al, 1995; Lupton & Gaffney, 2006; Murray & Turner, 2004; Reeder et al, 1997 and Shoveller et al 2003). Tanned skin was considered part of a healthy lifestyle, such as enjoying the outdoors (Gerbert et al, 1996 and Lupton & Gaffney, 1996) and being able to holiday in sunny foreign locations (Carter, 1997). One Californian study reported that the sun was positively regarded as a source of vitamin D (Gerbert et al 1996). Carter suggests, however, that in a consumer society, "health" is understood more in terms of the *appearance* of health than in the avoidance of danger (Carter, 1997).

Two studies report adults' views that tanned children appeared healthier (Goodlad et al, 1995 and Reeder et al, 2000):

> *Children with suntans look healthy, they look lovely. (mother, aged 31-40, p7, Goodlad et al, 1995)*

Whilst no participant in Reeder et al.'s (2000) study thought it was acceptable for a child to become sunburnt, they believed tanned skin was indicative of health:

> *If you're fit, healthy and white it's just not quite the same (participant, Reeder et al, 2000).*

Sunbed users justified this use because they felt that tanned skin improved their appearance and made them feel healthy (Murray & Turner, 2004). One quote expressed sunbed use in terms of addiction:

> *If I haven't been on a sunbed for a while, like when I'm trying to save money, then I just don't feel as well, as healthy. I get colds and stuff. I start to feel down and get very tense. I just don't have the willpower to stop for long. (Female participant, Murray & Turner, 2004).*

Tans were actively pursued by adolescents who wanted their appearance to better "fit the picture" of what constituted a fit and healthy appearance among their peers and promoted by the media:

> *I think they [the media] send out that… you should go sunbathing because you look a whole lot better and in all the ads in magazines you see bronze, athletic people and they look so much better… I don't know… I think they are encouraging us to go sun tanning (female participant, age 12, edit in original, Shoveller et al, 2003).*

The "nice healthy glow" (Participant quote, Murray & Turner, 2004) provided by a tan was contrasted to perceptions of white, untanned skin.

#### 5.4.1.2. Meanings of pale skin

Three study reports (from Scotland, Australia and Canada) describe negative associations with white, untanned skin, which was described as unhealthy, artificial, sterile, like a "milk bottle", like ghost and indicative of being a "couch potato" (Carter, 1997; Lutpon & Gaffney, 2006 and Shoveller et al, 2006).

White skin evoked negative emotions, with people feeling embarrassed and self-conscious of pale skin (Carter, 1997 and Lupton & Gaffney, 2006), especially if British and on holiday somewhere warm:

> *…white legs come out, I'm ashamed to be Scottish…it's like if you see a group of peelie wally people then they are Scottish (Carter, 1997).*

An Australian study also found that pale skin was associated with being a "Pommy" while a tan was thought to be Australian (Lupton & Gaffney, 2006).

Only one study reported a positive white-skinned role model – that was Madonna, whose pale skin was seen as indicating her individuality (Lupton & Gaffney, 2006).

#### 5.4.1.3. Tans are attractive

Seven studies described tanned skin as being physically attractive (Carter, 1997; Gillespie et al 1993; Goodlad et al, 1995; Lupton & Gaffney, 2006; Murray & Turner, 2004; Shoveller et al, 2003 and Young et al, 2005).

Four studies, among adolescents, young adults and sunbed users, report that tanned skin increased participants' self-perception of attractiveness, increasing both psychological well being and social confidence among peers (Carter, 1997; Gillespie et al, 1993; Murray & Turner, 2004 and Shoveller et al, 2003). Related to feelings of attractiveness conveyed by a tan, two studies, one among sun bed users, showed a perception that bad skin and acne were cleared up by UV exposure (Carter, 1997 and Murray & Turner, 2004).

One study among adolescents discussed the desire for a tan in the context of other aspects of appearance, like clothing and hairstyle that were felt necessary to 'fit in' with their peer group (Shoveller et al, 2003). Young women in the studies by Murray & Turner (2004) and Young et al, (2005) explicitly described a tan as addressing negative self-image:

> *I feel that I have a lot of bodily imperfections and by having a tan that it makes them seem less obvious… I also think that it makes me more outgoing somehow… that may sound stupid but it does have that effect on me and my personality. (Female participant, reviewer's edit, Murray & Turner, 2004).*

> *For some reason, brown fat looks nicer than white fat (female participant, Young et al, 2005).*

Carter's participants report that the tan-aesthetic was taken further, with holiday clothes bought specifically to 'go with' it:

> *Your clothes look good if you've got a tan…every summer before people go on holidays….everyone buys them in mind of when they've got a tan (participant, Carter 1997).*

This behaviour, treating tanned skin as a fashion accessory, highlights the tan as a commodity (Carter, 1997).

#### 5.4.1.4. Tans signify a good holiday

Two UK studies show that a tan signifies a good holiday, especially a holiday abroad (Carter, 1997 and Goodland et al, 1995).

> *First day back at work…..everyone says "WOW! Have you been on your holidays? (edit in original, Carter, 1997)*

> *I think if you go abroad as well, you want to come back with a suntan, so people know you've been abroad (p.5 Goodlad et al, 1995)*

Carter (1997) interprets the tan as a "symbolic artefact" or "souvenir" to take home, and that it is, in this sense, a symbol of tourist consumption, and one that is all the more pressing in countries, like the UK, where good summer weather cannot be guaranteed.

#### 5.4.1.5. Peers views of tans

Peers were an important influence on UV exposure reported in three studies (Gillespie et al 1993; Murray & Turner, 2004 and Shoveller et al, 2003). Those using sun beds said they did so to fit in with their companions if going on holiday (Murray & Turner, 2004). Two studies, among adults and adolescents, reported that tans gained them a positive response from peers (Murray & Turner, 2004 and Shoveller et al, 2003). However, there was a fine line, with tans that were considered too dark criticised as

well as those thought too pale and adolescents compared with each other to establish what was appropriate (Shoveller et al, 2003). One study also reports that children and adolescents would encourage a friend to cover up if they were getting burnt (Gillespie et al, 1993).

***Evidence statement 4: Perceived barriers - Positive perceptions of a tan***

4a. Tanned skin is regarded positively in a number of ways described across nine study reports of qualitative research: as healthy (in contrast to untanned, white skin, which is seen as unhealthy), attractive, endorsed by peers and a key symbol of a good holiday (Carter, 1997 [++]; Gerbert et al, 1996 [+]; Gillespie et al 1993 [-]; Goodlad et al, 1995 [-]; Lupton & Gaffney, 1996 [+]; Murray & Turner, 2004 [+]; Reeder et al, 1997 [-]; Shoveller et al 2003 [++] and Young et al, 2005 [+])

4b. Seven study reports show that tanned people are seen as healthy by children, adolescents and adults (Carter, 1997; Gerbert et al, 1996; Goodlad et al, 1995; Lupton & Gaffney, 2006; Murray & Turner, 2004; Reeder et al, 1997 and Shoveller et al 2003). One study reported that the sun was positively regarded as a source of vitamin D (Gerbert et al 1996).

4c. Three study reports (from Scotland, Australia and Canada) describe negative associations with white, untanned skin, which was described as unhealthy and indicative of being unfit (Carter, 1997; Lutpon & Gaffney, 2006 and Shoveller et al, 2006).

4d. Seven study reports, among children, adolescents and adults, describe tanned skin as being physically attractive (Carter, 1997; Gillespie et al 1993; Goodlad et al, 1995; Lupton & Gaffney, 2006; Murray & Turner, 2004; Shoveller et al, 2003 and Young et al, 2005). Two studies thought that bad skin and acne were cleared up by UV exposure (Carter, 1997 and Murray & Turner, 2004).

4e. Peers are reported an important influence on UV exposure in three studies among adolescents and sunbed users as they may react positively to tans. (Gillespie et al 1993; Murray & Turner, 2004 and Shoveller et al, 2003).

4.f Two UK study reports show that a tan signifies a good holiday, especially a holiday abroad, and could be seen as a necessary “symbolic souvenir” (Carter, 1997 and

Goodlad et al, 1995).

### 5.4.2. Hassle of protection

Protection from sun exposure can be gained using a number of methods; however one USA study noted that sunscreen was the most mentioned method, and suggest that other methods should be given greater prominence (Glanz et al 1999). Australia's "Slip, Slap, Slop" for example, advises covering up, wearing a hat and wearing sunscreen. However, a Canadian study suggests that, as adolescents are concerned about their image, they are most likely to comply with using sunscreen rather than covering up by wearing hats or long sleeves (Shoveller et al 2003).

#### 5.4.2.1. Sunscreen

Seven studies discuss barriers to sunscreen use (Carter, 1997; Geller et al, 2008; Gerbert et al, 1996; Gillespie et al, 1993; Glanz et al, 1999; Goodlad et al 1995 and Reeder et al 2000).

Sun-screen was seen as expensive (Geller et al, 2008; Gerbert et al, 1996; Glanz et al, 1999; Goodlad et al 1995 and Reeder et al 2000), messy/greasy (Gerbert et al, 1996), time consuming to apply (Gillespie et al, 1993; Glanz et al, 1999) and could cause irritation or allergies (Geller et al, 2008; Gerbert et al, 1996; Gillespie et al, 1993). Possible long term negative consequences of sunscreen use, including cancer, were mentioned by two studies (Gerbert et al 1996; Reeder et al, 2000). A lack of authoritative information about sunscreen use was reported by one study (Reeder et al, 2000).

Parents reported that children were uncooperative when it came to putting on, and reapplying, sunscreen (Goodlad et al, 1995; Glanz et al, 1999; Reeder et al, 2000).

> *They won't do it themselves; they just stand there, arguing while you put it on (Goodlad et al 1995)*

In addition, school teachers in the USA were concerned about the practicalities of putting sunscreen on children before outdoor activities, including gaining parental

permission, monitoring use and the effort of doing it. Expense and allergies were also mentioned (Geller et al 2008).

Two studies reported resistance to sunscreen because it was felt to prevent "the ultimate tan" (participant quote, Carter, 1997; theme also reported by Gerbert et al 1996). Conversely, one respondent reported burning despite using sunblock (Goodlad et al, 1995).

#### 5.4.2.2. Hats

Four studies report on the impracticalities of wearing a hat (Gillespie et al 1993; Glanz et al 1999; Lupton & Gaffney, 2006 and Reeder et al 2000). Hats were felt to restrict activity such as sports (Glanz, et al 1999), while younger children might take them off (Reeder et al, 2000). Parents also reported that they didn't like to wear hats, but that children noticed if they didn't (Reeder et al 2000).

In Australia, younger children were more likely than older ones to wear hats (Gillespie et al 1993) although hats were more likely to be worn if, like baseball caps, they were seen as fashionable (Gillespie et al 1993; Lupton & Gaffney, 2006). Parents in New Zealand wanted hats to be part of school uniform to assist encouraging children to wear hats (Reeder et al 2000). It was noted in another study, however, that as soon as baseball caps became part of a school uniform, they lost their positive connotations (Lupton & Gaffney, 2006).

#### 5.4.2.3. Long sleeves/ covering up

Five studies discuss aspects of covering up (Gillespie et al 1993; Glanz et al 1999; Goodlad et al, 1995; Lupton & Gaffney, 2006 and Reeder et al 2000). Three studies report that covering up through wearing long sleeved tops was seen as too much by most, causing discomfort in the heat (Gillespie et al 1993; Glanz et al 1999; Lupton & Gaffney, 2006). Two studies (among adults and adolescents) add that the items' fashionability was the crucial concern (Glanz et al 1999; Lupton & Gaffney, 2006).

At the beach, rash suits and wetsuits are favoured by parents for children (but not toddlers) because they are quick drying and negate the need for sunscreen (Reeder

et al 2000). This may address another reported concern than young children repeatedly remove their T-shirts (Goodlad et al 1995).

***Evidence statement 5: Perceived barriers – The hassle of protection***

5a. Sun protection through use of sunscreen, wearing hats and covering up with long sleeves all had limitations. Sunscreen use is seen as a hassle in six study reports of qualitative research due to its expense, mess, time to apply and potential to cause irritation or allergies (Carter, 1997 [+]; Geller et al, 2008 [-]; Gerbert et al, 1996 [+]; Glanz et al, 1999 [+]; Goodlad et al 1995 [-] and Reeder et al 2000 [-]).

5b. In three study reports, parents say that children were uncooperative when it came to applying sunscreen (Goodlad et al, 1995; Glanz et al, 1999 and Reeder et al, 2000).

5c. Four study reports highlight impracticalities of hat-wearing (Gillespie et al 1993; Glanz et al 1999; Lupton & Gaffney, 2006 and Reeder et al, 2000) which limits children's activities, and may be rejected as unfashionable.

5d. In three study reports, covering up through wearing long sleeved tops was seen as uncomfortable in the heat (Gillespie et al 1993; Glanz et al 1999; Lupton & Gaffney, 2006). Rash vests and wetsuits may be better for young children on the beach, as t-shirts may be repeatedly removed (Goodlad et al 1995; Reeder et al 2000).

### 5.4.3. Structural challenges to sun protection in schools

Three studies, all relating to protection of children in schools, note structural or policy issues relating to skin cancer prevention (Geller et al, 2008; Gillespie et al 1993 and Glanz 1999). One study report suggests a willingness to ensure scheduled outdoor activities don't take place at the hottest time of day (Glanz et al 1999); however, two note there is limited ability to change scheduling around lunchtime (Geller et al, 2008 and Gillespie et al 1993). Provision of shade outside was seen as a possible improvement (Geller et al 2008 and Glanz et al 1999), although this was costly (Geller et al 2008) and anyway not always easy to use by pupils (Gillespie et al 1993).

| ***Evidence statement 6: Perceived barriers – Structural challenges in schools*** |
|---|
| 6a. Three studies discuss structural or policy limitations to skin cancer prevention in schools (Geller et al, 2008 [-]; Gillespie et al 1993 [-] and Glanz 1999 [+]) such as limited ability to change scheduling around lunchtime to avoid the hottest part of the day (Geller et al, 2008 and Gillespie et al 1993).<br><br>6b. Provision of shade outside was seen as a possible strategy (Geller et al 2008 and Glanz et al 1999), but costly (Geller et al 2008) and not always easy to use by pupils when playing (Gillespie et al 1993.) |

### 5.4.4. Limits of adult responsibilities

#### 5.4.4.1. Parents

Five studies describe the responsibility of parents for their children's safe sun behaviour (Geller et al, 2008; Glanz et al, 1999; Glanz et al, 2008; Reeder et al 2000 and Young et al, 2005). Younger children are dependent on their parents for sunscreen and other protection (Glanz et al, 1999; Young et al, 2005). Although parents were role models for their children's behaviour they did not always exhibit sun-safe habits (Glanz et al, 1999; Reeder et al 2000) and might themselves be ambivalent about their own desire for tanned skin (Young et al, 2005). It was also noted that parents aren't always with their children to ensure their safe-sun behaviour (Glanz et al 2008).

School and recreation workers recognised their potential role in educating parents (Geller et al, 2008 and Glanz et al 1999) although parental participation (Geller et al 2008), and lack of knowledge themselves (Glanz et al 1999) were potential barriers.

#### 5.4.4.2. School teachers

One study suggests that there are a number of barriers to teachers' involvement in protecting children from the sun at school. If they are to provide education about safe sun behaviour, it needs to be decided who should teach it, to whom and how often

and other responsibilities may be overwhelming for teachers (Geller et al 2008). In addition, liability if children were to get sunburnt or if they were allergic to sunscreen also needs to be considered (Geller et al 2008).

#### 5.4.4.3. Teenagers vs younger children

Five studies note that the transition from child to adolescent is marked by increasing independence, or rebellion, and that this may have negative effects on safe sun behaviour (Gillespie et al 1993; Lupton & Gaffney, 2006; Paul et al 2003; Shoveller et al 2003 and Young et al, 2005). This was because parents' advice was no longer always followed (Lupton & Gaffney, 2006) as adolescents took more responsibility for their own behaviour (Young et al, 2005; Lupton & Gaffney, 2005) and they began to experiment with "intentional tanning" – that is, actively seeking a tan rather than getting one incidentally as a result of activity outside (Shoveller et al, 2003). In addition, media campaigns such as "Slip Slap Slop", that had been seen as relevant when they were children, came to be regarded as "simplistic" and less credible as they got older (Paul et al, 2003).

| ***Evidence statement 7: Perceived barriers – Limits of adult responsibilities*** |
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| 7a. Eight study reports of qualitative research discuss the limitations of parental responsibility for protecting children from sun exposure (Geller et al, 2008 [-]; Gillespie et al 1993[-]; Glanz et al, 1999 [+]; Glanz et al, 2008 [+]; Lupton & Gaffney, 2006 [+]; Paul et al 2003 [-]; Shoveller et al 2003 [++] and Young et al, 2005 [+]).<br><br>7b. Four study reports discuss the responsibility of parents for their children's safe sun behaviour (Geller et al, 2008; Glanz et al, 1999; Glanz et al, 2008 and Young et al, 2005). This responsibility may be limited by parents' failure to demonstrate sun-safe habits themselves (Glanz et al, 1999; Reeder et al 2000) due to ambivalence about their own desire for tanned skin (Young et al, 2005). In addition, parents aren't always with their children to ensure safe-sun behaviour (Glanz et al 2008).<br><br>7c. Five study reports note that the transition from child to adolescent is marked by increasing independence, or rebellion, and that this may have negative effects on safe sun behaviour (Gillespie et al 1993; Lupton & Gaffney, 2006; Paul et al 2003; |

Shoveller et al 2003 and Young et al, 2005).

7d. One study suggests that there are a number of practical barriers to teachers' involvement in protecting children from the sun at school, such as concern about allergies to sunscreen and time (Geller et al 2008).

### 5.4.5. Being outdoors

Being outdoors was seen positively in seven studies, for children and adults alike (Gebert et al, 1996; Gillespie et al, 1996; Glanz et al 1999; Goodlad et al, 1995; Lutpon & Gaffney, 2006; Reeder et al, 2000; Shoveller et al, 2003), and may be linked to perceptions of the tan as healthy, discussed in Section 5.4.1. In particular, what Shoveller et al (2003) refer to as "incidental tanning" may have particular problems when considering sun protection. Incidental tanning is that obtained by being outside, while not actively seeking a tan, or not somewhere, like the beach, that is strongly associated with the risk of sunburn. Attitudes to this incidental sun exposure, means that sunscreen is less likely to be used on overcast days (Gebert et al 1996), in the winter (Gillespie et al, 1996, Australia; Glanz et al 1999, Hawaii), and for children when going out to play somewhere other than the beach (Glanz et al 1999) or for a shorter time than the whole day (Gillespie et al,1999). Two studies suggest that sunscreen is seen by children and adolescents as interfering with the spontaneity of outdoor activity (Reeder et al, 2000 and Shoveller et al 2003). One UK study suggests people are more likely to use sunscreen when on holiday abroad than when in their home country (Goodlad et al, 1995).

In addition, one study suggests that young men prefer to get a tan incidentally, seeing sunbathing as a passive, vain, "unmasculine" activity (author quote, Lutpon & Gaffney, 2006).

***Evidence statement 8: Perceived barriers – Perceptions of being outdoors***

8a. "Incidental tanning", obtained by simply being outdoors, was seen positively in seven study reports of qualitative research, for both children and adults (Gebert et al 1996 [+]; Gillespie et al, 1996 [-]; Glanz et al 1999 [+]; Goodlad et al, 1995 [-]; Lutpon

& Gaffney, 2006 [+]; Reeder et al, 2000 [-]; Shoveller et al, 2003 [++]).

8b. Such attitudes to this incidental sun exposure, makes sunscreen use less likely on overcast days (Gebert et al 1996), in the winter (Gillespie et al, 1996, Australia; Glanz et al 1999, Hawaii), and for children when going out to play somewhere other than the beach (Glanz et al 1999) or for a shorter time than the whole day (Gillespie et al,1999). People in the UK may be more likely to use sunscreen on holiday abroad than when at home (Goodlad et al, 1995).

## 5.5. Cues to Action

Eleven studies discuss cues to action to protect themselves from sun exposure. These include the positive influence of parents and other adults, and peers (Gillespie et al 1993, Glanz et al 1999 and Lupton & Gaffney, 2006), knowing someone who has had skin cancer (Gerbert et al, 1996; Gillespie et al 1993; Goodlad et al 1995 and Young et al, 2005), and media campaigns (Gerbert et al, 1996; Gillespie et al, 1993; Glanz et al, 2008; Goodlad et al, 1995; Lupton & Gaffney, 1995; Paul et al, 2003; Reeder et al, 2000; Tones & Smith, 1995 and Wright & Bramwell, 2001).

### 5.5.1. Sources of encouragement

Three studies, all among children or adolescents, discuss sources of encouragement or role models to adopt safe sun behaviours (Gillespie et al, 1993; Glanz et al, 1999 and Lupton & Gaffney, 2006). Parents were key for younger children, with primary school children in Australia and the USA reporting their behaviour in the sun was influenced by parents and other adults such as coaches, teachers or youth workers (Gillespie et al 1993 and Glanz et al 1999), while older children are more influenced by their peers (Gillespie et al 1993).

It was suggested by both parents and recreation staff that children were less resistant to protection and wearing protective clothing when it was made routine. Further, as regular water consumption was already routine during outdoor sports on hot days, this was identified as a possible opportunity to also address sun safety (Glanz et al, 1999).

Most students in one Australian study did not believe that their parents were interested in getting a tan, some had previous skin cancer removed (Gillespie et al, 1993). Students in another study were critical of sunburn, labelling those with it as "irresponsible" people who did not care about their skin (Lupton & Gaffney, 2006).

### 5.5.2. Knowing people that have had skin cancer

Four studies suggest that knowing someone who had skin cancer was motivating to take more care (Gerbert et al, 1996; Gillespie et al 1993; Goodlad et al 1995 and Young et al, 2005). Gerbert et al (1996) found that more of those who were classed as having high concern about sun protection knew someone who had skin cancer while only one of the low concern groups did.

### 5.5.3. Media campaigns

Nine study reports discuss aspects of media campaigns about skin cancer prevention (Gerbert et al, 1996; Gillespie et al, 1993; Glanz et al, 2008; Goodlad et al, 1995; Lupton & Gaffney, 1995; Paul et al, 2003; Reeder et al, 2000; Tones & Smith, 1995 and Wright & Bramwell, 2001), in four of which the focus of the study was one of three specific campaigns; Slip Slap Slop (Paul et al 2003), Me No Fry (Lupton and Gaffney, 2006) or the Yorkshire TV advertisement (Goodlad et al, 1995 and Tones & Smith, 1995). Comments which relate only to a very specific element of a particular sun safety campaign (the "egg" in the "Me No fry" campaign, for example) are not discussed here, but comments that are generally applicable to media campaigns are recorded. Tones and Smith (1995) note good recall of the Yorkshire TV advert and its key messages to cover up and use sunscreen.

Gillespie et al (1993) report that adolescents viewed the general mass media portrayal of tans was as appealing, and this was supported by adults with low concern about sun safety in the study by Gerbert et al (1996). This latter group related what information they had heard to "the big scare" about increased UV risk due to the depleted ozone layer. By contrast, those in the same study who were categorised by researchers as having high concern about sun safety were aware of a lot of publicity about the potential negative affects of sun exposure, though whether this concern motivated notice of the publicity or *vice versa* is unknown (Gerbert et al, 1996).

While sun safety messages from the media were seen as credible, this was not the most important source of knowledge by adolescents (who relied on peers) or younger children (who relied on authority figures such as parents and teachers) (Gillespie et al 1993). In addition, adverts may lose their power as they become familiar:

> *You don't pay attention because you have seen it so many times; you need new stuff all the time (male adolescent, Lupton & Gaffney, 2006).*

Four studies suggested that children were receptive to sun safety messages portrayed in a fun way, such as hat making in the classroom (Glanz et al, 1999) or humorous or cartoon advertisements (Goodlad et al, 1995; Lupton & Gaffney, 2006 and Paul et al, 2003). Similarly, some children liked adverts with catchy jingles (Paul et al, 2003 and Tones et al, 1995), and the positive portrayal of people having fun while adhering to safe sun practices (Luton & Gaffney, 2006). However, criticism about campaigns, particularly from older children and adolescents, included those seen as unrealistic (Lupton & Gaffney, 2006); absence of the "cool factor" (Paul et al, 2003); "corny" jingles (Paul et al, 2003); simplistic messages (particularly in cartoon form, Paul et al 2003). One study suggested that more graphic "shock" images would be preferred, especially by older boys (Paul et al, 2003) although adults in UK study did not think frightening people appropriate, although they did feel that people lacked sufficient knowledge about skin cancer (Wright & Bramwell, 2001).

Reeder et al, 2000 noted confusion about the meaning of the UV index and associated "burn time".

| ***Evidence statement 9: Cues to action*** |
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| 9a. Eleven study reports of qualitative research discuss people's cues to protective action against UV exposure (Gerbert et al, 1996 [+]; Gillespie et al, 1993 [-]; Glanz et al, 1999 [+]; Glanz et al, 2008 [+]; Goodlad et al, 1995 [-]; Lupton & Gaffney, 1995 [+]; Paul et al, 2003 [-]; Reeder et al, 2000 [-]; Tones & Smith, 1995 [-]; Wright & Bramwell, 2001 [-] and Young et al, 2005 [+]).<br><br>9b. These include the positive influence of parents and other adults for younger children (Gillespie et al, 1993 and Glanz et al, 1999) and peers for older children (Gillespie et al 1993), knowing someone who has had skin cancer (Gerbert et al, |

1996; Gillespie et al 1993; Goodlad et al, 1995 and Young et al, 2005), and media campaigns (Gerbert et al, 1996; Gillespie et al, 1993; Glanz et al, 2008; Goodlad et al, 1995; Lupton & Gaffney, 1995; Paul et al, 2003; Reeder et al, 2000; Tones & Smith, 1995 and Wright & Bramwell, 2001).

9c. Media campaigns need to engage younger children (Goodlad et al, 1995; Lupton & Gaffney, 2006 and Paul et al, 2003) whilst not alienating older children (Lupton & Gaffney, 2006 and Paul et al, 2003), it is also suggested that they need to change regularly to maintain their impact (Lupton & Gaffney, 1995) and that shock images may appeal to older boys (Paul et al, 2003).

## 5.6. Self-Efficacy

Two UK studies explicitly address self-efficacy in skin cancer prevention with some participants reporting examining themselves for signs of skin cancer (Carter 1997 and Wright & Bramwell, 2001). Skin cancer is understood as largely preventable and identifiable early, by those taking personal responsibility for their skin. One study provides an explanatory framework about the sun safety behaviour of adults (Carter, 1997). Based on participants' comments about monitoring their sun exposure and, especially, the moles on their skin, Carter suggests sun safety behaviour is type of self-surveillance and a personal responsibility. He interprets this in terms of Foucault's "disciplinary gaze", but in this case with state surveillance replaced by the individual who shows self-monitoring behaviour (Foucault, 1979). He suggests that this can be thought of as a "non-risk reduction strategy" whereby people can maintain risky behaviour as long as they monitor themselves closely enough

***Evidence statement 10: Self efficacy***

10a. Two study reports of UK based qualitative research address self-efficacy in skin cancer prevention with participants reporting examining themselves for signs of skin cancer (Carter 1997 [+] and Wright & Bramwell, 2001 [-]). Skin cancer is understood as largely preventable and identifiable early, by those taking personal responsibility for their skin through self-surveillance and personal responsibility (Carter, 1997).

## 5.7. Summary findings from studies not synthesised using the Health Belief Model

Two studies, by Garvin and Eyles (2001) and Glanz et al (2008), undertook studies that were not really fully amenable to synthesis using the health belief model and these are briefly summarised in this section. While Garvin & Eyles (2001) did not contribute any findings to the framework, the paper by Galnz et al (2008) did. It was felt important to consider the latter separately here, however, as its key message, shown in Section 5.7.2, is better understood through its contextualisation within the study findings as a whole.

### 5.7.1. Comparison of skin cancer policies in the Australia, Canada and the UK

The study by Garvin and Eyles (2001) uses the analytic constructs of framing (developed from Goffman, 1974, by Entman, 1993) and narrative to understand the differences in the construction of skin cancer public health policy in Australia, Canada and the UK. Framing is a technique to define a problem, diagnose the cause(s), make a moral judgement on the issues and suggests potential remedies. Frame theory states that people in a given society share a set of symbols, beliefs and images that act as interpretive schemes for making sense of the world – these frames are interpretive constructs to order experiences in, and responses to, the environment. Over time, and through the day to day activities of actors involved in the problem, issues and solutions become integrated into existing frames and develop storylines of their own which become the accepted definitions of problems and can be considered as policy narratives. In highly contested areas, competing frames may vie for control of the dominant narrative.

According to Entman, an issue is continually framed and re-framed with *communicators* describing what to say based on underlying belief systems; the *text* contains messages containing keywords, images and other thematic reinforcements of specific facts or judgements. The *receiver*'s thinking is guided by social context, and may or may not reflect the thinking of communicator or text. *Culture* is the stock of commonly invoked words and mages that reflect the common discourse or thinking of a group. These framing concepts are used as organising principles in the analysis.

Through analysing policy documents for each country and interviewing key informants, Garvin and Eyles (2001) found a different narrative embedded in each national policy. Social political, cultural and historical contexts within which policy making takes place frame the problem and constrain and limit both problem definition and potential policy making solutions. The findings are discussed below and summarised in Table 6.

### *Communicators*

In UK the use of public health specialists to communicate sun safety messages reflects strong centralised agency and the use of trained personnel is similar in Australia. In Canada, agents are much more disparate and there is no use of marketing specialists.

### *Text*

Australian programmes started much earlier than the other countries (in the 80s, rather than the 90s, with “Slip Slap Slop”) and core messages are to cover up and to avoid the sun during peak hours. There is evidence of less tolerance towards deeply tanned skin. In addition, the scale of the problem in Australia, with much of the population at high risk, permits strong, authoritarian messages.

Canadian projects show similar messages to Australia, but differ in their additional link to environmental concerns about a depleted ozone layer. In addition, there is no attempt to address the social desirability of a tan in Canada.

The authors suggest that UK programs such as “Are you dying to get a suntan” (aimed at young women) had little effect because they failed to address the desirability in Britain of gaining a tan “for health and beauty” (author quote). Other programmes have a more moderate message, and focus on not burning, seeking moderate exposure and responsible behaviour, rather than advocating total avoidance.

### *Receivers*

Skin cancer in Australia has been visible for decades, and many people have had personal experience of, or know someone affected by, skin cancer. People are therefore sensitised to messages about it.

In Canada, increasing visibility of skin cancer incidence in the early 90s occurred at the same time as increasing concern about the depleted ozone layer. There is also an increased tendency to holiday in warmer places, especially in the winter, increasing exposure. However, sensitivity to increasing rates of skin cancer remains quite low.

Little concern about skin cancer is seen in England compared to other public health messages. Skin cancer rates are lower in England that in countries in hotter climates and the public remains largely sceptical. Warm holiday locations are increasingly sought. Programmes were implemented in response to government mandates such as Health of the Nation. It is recognised by personnel that abstinence messages are unlikely to seem credible and will be largely ignored due to the climate and the keen anticipation of summer.

### *Culture*

An institutional regulatory culture exists in the UK with mandated policy targets, such as those in Health of the Nation, common. There is, however, little regulatory control around sun safety products.

Australian structures are strong and seen as credible. Sun safety products on sale are highly regulated with the claims that can be made for products limited and a restriction on the SPF factors available. In addition, institutional changes such as “no hat – no play” have been seen in schools, together with the provision of structural shade and school rescheduling sports outside the 11am-3pm times.

**Table 6 Framing and narratives of Sun Safety in Australia, Canada and England**

| | Australia | Canada | England |
|---|---|---|---|
| *Framing locations* | | | |
| Communicators | Marketing/ health promotion specialists | Coalition of doctors, companies and public health | Marketing/ health promotion specialists |
| Text | Strict avoidance and protective measures | Personal protection and environmental change | Moderation and reasonable behaviour |
| Receivers | Sensitised to skin cancer prevention messages | Sensitised to the environmental messages | Not sensitised to skin cancer, do not want to hear avoidance messages |
| Culture | Grants regulatory control to authorities | Little regulatory control granted to authorities | Target setting by agencies |
| *Resultant narrative* | | | |
| The problem | Skin cancer as social problem | Skin cancer is an environmental problem | Skin cancer is a growing public health problem |
| The solution | Everyone must be vigilant: must reduce social acceptance of tanned skin | Personal protection (sunscreen) and environmental rehabilitation | Moderate exposure and reasonable protective behaviours |

Source: Garvin and Eyles, 2001 Table 1, p.1181

***Evidence statement 11: Skin cancer prevention policy***

11a. One study uses the analytic constructs of framing and narrative to understand the differences in the construction of skin cancer public health policy in Australia, Canada and England (Garvin & Eyles, 2001 [++]). While skin cancer is conceived as a growing public health issue in England, public health messages have been focussed around expectations of reasonable protective factors and moderate UV exposure since the population is not considered sensitised to skin cancer and does not want to hear messages that promote avoiding the sun.

### 5.7.2. Cognitive interviewing to assess survey questions

Glanz et al (2008), aimed to develop core measures of sun exposure and sun protection habits for a questionnaire. They used cognitive interviewing to help

uncover how well people understood and interpreted questionnaire items. Cognitive interviewing can also address issues of memory retrieval and how a particular person responds to a question. Participants were encouraged to "think aloud" as they answer questionnaire items and are queried about each item afterwards. The authors present the revised questionnaire and provide some limited information about items needed to be altered as a result of the research. Although the findings from this study did contribute to the synthesis, the report is described here because it has further meanings that are not captured through the conceptual framework.

Such observations may also be useful in this context as necessary clarifications for sun safety information, as well as for such questionnaires.

Main revisions to the questionnaire resulted from the need for clarification or frames of reference, for example "how often do you wear a shirt with sleeves?" became clarified with the addition of: "that covers your shoulders." Asked about the colour of their untanned skin, respondents found "dark" and "black" confusing words, so the new version of the questionnaire included skin tones described as: "very fair, fair, olive, light brown, dark brown and very dark".

Items that asked adults about their children needed clarifying where they had more than one child, and so were changed to specifically ask about their eldest child aged one to ten years. Parents also expressed concern that they did not know what their child always did, as they were often separated from them.

Whilst the detail of language and expression from this study may or may not be relevant to specific skin cancer information campaigns, the capacity for misunderstanding that it demonstrates underlines the importance of piloting such material with target groups.

| ***Evidence statement 12: Communicating skin cancer prevention messages*** |
| --- |
| 12a. One study uses cognitive interviewing to refine the way questions were asked for a survey tool (Glanz et al, 2008 [+]), and the capacity for misunderstanding that it demonstrates underlines the importance of piloting any information material aimed at primary prevention of skin cancer with target groups |

# 6. Discussion

## 6.1. Statement of principal findings

This review was aimed at addressing two primary questions and three secondary considerations:

1. What factors help to convey information to prevent the first occurrence of skin cancer attributable to UV exposure?

2. What factors hinder the communication of primary prevention messages?

   i. Any environmental, social and cultural factors (covering financial/human resource factors) that prevent or support the uptake of the information.

   ii. Availability and accessibility for different populations.

   iii. Views about the content of information provided or the way in which it is conveyed.

In order to address these questions, we searched for qualitative research that explored the views and experiences of those involved in planning and delivering skin cancer prevention messages, and the views and experiences of the public at whom they are aimed. No studies were identified that reported the views of those involved in planning and delivering skin cancer prevention messages relating to these research questions. Sixteen study reports (about 15 different studies) were identified among adults, adolescents and children.

### 6.1.1. Question 1: What factors help convey information to prevent the first occurrences of skin cancer?

Most of the included studies explore attitudes towards sun safety in general or are part of a formative, rather than outcome, evaluation for a campaign: the latter, therefore, also focus on people's attitudes and behaviours, rather than discussing specific elements of an existing skin cancer prevention campaign. Only three specific, running campaigns are discussed. Of these, two are Australian, relating to "Slip Slap Slop" and "Me No Fry" (Paul et al, 2003; Lupton & Gaffney, 1996), and one relates to a local UK campaign shown on Yorkshire TV (Tones & Smith, 1995). These

information campaigns were not identified by the reviews of effectiveness and cost-effectiveness. A total of nine studies mention media campaigns generally as a source of information about skin cancer protection (Gerbert et al, 1996; Gillespie et al, 1993; Glanz et al, 2008; Goodlad et al, 1995; Lupton & Gaffney, 1995; Paul et al, 2003; Reeder et al, 2000; Tones & Smith, 1995 and Wright & Bramwell, 2001). In general, the studies found that people knew that there were benefits to UV protection, although this may not translate into changes in behaviour. There is also some suggestion that children may not understand the long term risks of sun exposure and sunburn. Erroneous beliefs about the causes of skin cancer, the belief that a suntan was protective, and the desire for a deep tan overriding attitudes to sunburn and sunscreen, were also found in adults. These beliefs and gaps in understanding could be usefully addressed by information aimed at preventing skin cancer.

Few of the findings relate directly to factors that help to convey skin cancer prevention information. Those that do are synthesised primarily in relation to people's:

- Cues to action (Section 5.5, page 58)

Media campaigns generally are positively identified as cues to take preventative action against skin cancer and are seen as credible sources of information. The Australian studies about specific media campaigns suggest that these need to change regularly to retain their impact. In terms of the accessibility for different populations (secondary consideration ii), and views about the content or manner of providing information (secondary consideration iii), children, adolescents and adults may have different needs. Children liked humour, fun activities, cartoons and catchy advertising jingles, while adolescents may find these simplistic, corny or uncool. Older boys said graphic "shock" images would act as cues to action, while adults did not believe that it was appropriate to frighten people into adopting particular behaviours. In addition, other sources of information and models of behaviour may be more important cues to action, such as parents (for younger children) and peers (for adolescents).

Findings from the study that used cognitive interviewing to assess people's understanding of a questionnaire about skin cancer protective behaviours showed some misunderstandings resulting from questions that were not worded explicitly, or clearly (Glanz et al, 2008, see Section 5.7). Together with the findings above about

different responses to campaigns among different age groups, this suggests that images and messages need to be piloted among target groups to ensure that they are appropriate (secondary consideration ii).

### 6.1.2. Question 2: What factors hinder the communication of primary prevention messages?

Most of the findings in this synthesis relate to research question two about the factors that hinder the communication of effective primary skin cancer prevention. These include the findings that relate to people's perceptions of:

- Their susceptibility to skin cancer (Section 5.1, page 41)
- The severity of skin cancer (Section 5.2, page 42)
- The barriers to adopting skin protection behaviours (Section 5.4, page 46)

Generally, participants in the included studies perceive their susceptibility to skin cancer as low, and do not perceive the results of UV exposure to be severe. They believe that skin cancer is not severe and can be easily cured. Barriers to adopting safer skin cancer prevention behaviour relate to positive perceptions of tans, the hassle of covering up or applying sunscreen, challenges to altering existing structures and procedures in schools, the limits of adult responsibility when protecting children from sun exposure and positive associations with being outdoors.

In relation to secondary consideration - environmental, social and cultural factors that prevent or support the uptake of information - it is noted in Section 5.1 that there is a perception that darker skin tones are protective against skin cancer. In addition, there is some suggestion that photo-aging of the skin is a more immediate concern than skin cancer for some, perhaps particularly women (Section 5.2).

The comparative analysis of how skin cancer policies have been framed and the narratives associated with skin cancer prevention activities in Australia, Canada and England suggests that, while skin cancer is conceived as a growing public health issue in England, public health messages have been focussed around expectations of reasonable protective factors and moderate UV exposure since the population is not considered sensitised to skin cancer and does not want to hear messages that

promote avoiding the sun (see Section 5.7.1, Garvin & Eyles, 2008). Findings from Australia, therefore, may not be directly applicable to the UK. In Australia, skin cancer is understood as a social, rather than public health, problem and the population is highly sensitised to skin cancer prevention messages which promote strict avoidance and protective measures requiring everyone's vigilance against skin cancer. They also aim to reduce the social acceptability of tanned skin. Such an understanding of the different fames and narratives about skin cancer prevention in different countries may help to inform UK based interventions. This analysis was based on policies from 1996-98 and the cultural and policy environment may have changed since then. For example, the visibility and acceptability of fake tan and awareness of the possible danger of tanning may have increased in the UK. Despite this, some of the particular needs of Australia and the UK, given the climate and population mix in each, are likely to remain.

## 6.2. Methodological considerations

It was possible to use the Health Belief Model to provide a coherent synthesis framework for 15 of the 16 included studies. This was already used to structure study design and/or analysis, to a greater or lesser extent, by four included studies. Two studies, due to a different research focus, were not really amenable to this synthesis structure. Most of the included studies essentially wanted to understand and describe attitudes, opinions and practices about tanning, sun/UV safety and skin cancer. By contrast, Glanz et al (2008) use cognitive interviewing to help develop a questionnaire which is to be used in research about sun protection behaviour and Garvin & Eyles (2001) use framing and narrative to examine differences in public health policies about skin cancer prevention in Australia, Canada and England. It has been suggested that the contribution of a study report to a synthesis can be used as an indicator of its quality (Noblit & Hare 1988;Pound et al. 2005). In this instance, the study report by Garvin and Eyles produced a sophisticated and well-developed policy analysis which was rated highly by the reviewers and was not amenable to synthesis precisely *because of* its unique perspective and method.

The review and synthesis of qualitative research is necessarily an interpretive process, and this synthesis remains the work of two researchers. Other interpretations of the findings would be possible, and would be likely with the use of

alternative conceptual frameworks to aid synthesis. We chose to use the Health Belief Model because of its familiarity in health promotion work, its use in four of the included studies and its relevance and amenability to the research questions we were asked to address. It may well have been possible and revealing to assess the findings of the studies in relation to the nation-specific frames and narratives described by Garvin and Eyles (2001). Even without using these analytic tools in the synthesis, we suggest that the findings may help to frame the applicability of studies from different countries to the UK.

This is just one of the possible synthesis options, an alternative would have been to explore accounts of tanning behaviour described in the included studies in terms of the reworking of Foucault's disciplinary gaze suggested by Carter (1997, see Box 1). We did not pursue this as such an analysis seemed likely to provide support for, or critique of, this *concept* in relation to risk assessment and behaviour described in the included studies, rather than provide findings that are translatable into public health recommendations by the committee. It is also likely to relate only to selected, focussed study findings in each study report, rather than the broad scope offered by the Health Belief Model. We remain aware, however, that the Health Belief Model is not without its critics, and that even within those included studies that used it, one augmented it using Social Cognitive Theory (National Cancer Institute 2005).

Quality appraisal for qualitative research remains a vexed issue. There are no universally accepted indicators of quality in qualitative research and different traditions and expectations of research procedures and reports are seen within and between academic disciplines. Given this lack of consensus, there are also no agreed protocols between researchers, reviewers and editors about the necessary nature and level of methodological detail about a study that should be reported. Limited word counts, especially in medical journals, may also mean that details of data collection and analysis procedures are left out in order to preserve space to report findings. Although we rated many study reports as poor, it is often unclear whether deficiencies are in the reporting or the actual conduct of the research and it is anyway unclear what, if anything should be considered a "fatal flaw" that would render findings highly suspect or invalid. It is particularly challenging to provide a meaningful, single overarching quality "score" for a study. A further unknown is how

any quality appraisal should influence either the conduct, or the use, of systematic reviews of qualitative research.

The protocol excluded dissertations/theses, books and book chapters. In practice, however, we did not exclude these study types where they met all other inclusion criteria. This meant that one study written up as a book chapter was included (Carter, 1997) and two pieces of grey literature about a media campaign for Yorkshire TV were included (Goodlad et al, 1995 and Tones & Smith, 1995). All three study reports are based in the UK and we believe that their exclusion would have unnecessarily restricted pertinent literature from the review. No other study reports of these study types were identified using the search strategies used. Reference lists were searched, and this is the way that we identified the book chapter, however, the frequent failure of qualitative research reports to cite other relevant research has been previously noted (Campbell et al. 2003). While the search strategy itself did not exclude these study types, we did not use any procedures that might have enhanced the potential for identifying them, such as contacting experts or searching thesis-specific databases. In the time frame of this project this was not feasible, although it remains possible that these sources would have identified further relevant study reports. We believe that we were justified in including those study reports that were identified because they added pertinent information to the review, and particularly since all were UK based (their exclusion would have left just two UK based study reports in the review).

Detailed study inclusion and exclusion criteria were pre-defined for this review and contained common elements with the criteria for the reviews of effectiveness and cost-effectiveness (Appendix 4). Study reports were only to be included if they related to specific types of information provision aimed at preventing primary skin cancer. However, as discussed above, we did ultimately include studies where the content did not relate directly to specific information resources aimed at preventing skin cancer. Through our initial reading of the full text of such studies it became clear that to exclude them would have lost useful findings, particularly about factors that hinder the communication of primary prevention messages (review question 2). In addition, concerns about how to deal with mixed primary and secondary prevention interventions were, in retrospect, largely irrelevant in this context. It is unlikely that qualitative researchers would, for example, limit people's conversations to primary

prevention only, if secondary prevention emerged as a key issue in the course of the research. Findings that are grounded in the data, and are based in the understanding of participants, are a strength of qualitative research. While in theory it is possible for us to disaggregate individual findings that do not directly relate to particular research questions from those that do, it might not be appropriate for us to do so.

As reviewers of qualitative research we need to strike a balance between aspects that are identified as important by participants and researchers of primary qualitative research and those aspects pre-defined as important in a protocol. While effectiveness reviews need to focus on tightly defined populations, interventions and outcomes, it is unlikely that these same criteria are appropriate for reviews of qualitative research where useful and applicable information may well be found in *related* research areas. It may, therefore, be more appropriate for inclusion criteria to be developed iteratively in response to initial findings, rather than pre-defined, so that it is possible to respond to the identified studies in the most productive way.

It remains unclear how to "weight" the synthesised findings. Unlike reviews and syntheses of quantitative data, it is not necessarily appropriate to regard the frequency of identifying a finding as conferring cumulative weight or greater generalisability or robustness. Findings reported in a single study may be found particularly insightful or pertinent, whilst findings common to several study reports may be less useful or applicable. These are matters of judgment on the part of both the reviewers and the review audience.

## 6.3. Further research

Only five study reports from the UK were identified, three of which were published more than ten years ago. It is possible that beliefs, attitudes and behaviours have changed since then and qualitative research to explore this could be undertaken.

It would be interesting for a synthesis of this data to be undertaken using an alternative conceptual framework, in order to see if different aspects are emphasised or identified.

## 6.4. Conclusion

Information campaigns to prevent the first occurrence of skin cancer may be enhanced by taking into consideration public understandings about it. We identified 16 study reports which addressed this and synthesised the findings of 15 of them using the Health Belief Model as a conceptual framework.

The synthesis suggests that people generally perceive their susceptibility to skin cancer, and its severity, as low. While the benefits of adopting protective behaviours in terms of reducing skin cancer risk are often recognised, these can be offset by the perceived benefits of having a tan and a number of practical and social barriers to adopting safer behaviour in relation to UV exposure. Peers, parents and media messages may act as positive cues to action that encourage safer behaviour, and people have a high sense of self-efficacy in terms of their understandings of skin cancer as both preventable and detectable through personal responsibility for behaviour and self-monitoring.

# Appendix 1 Protocol

# Protocol for providing public information to prevent skin cancer

## 1. Definition and scope of research questions

### 1.1 Primary research questions

The primary research questions will be addressed in two evidence reviews.

#### 1.1.1 Evidence review 1

The primary research questions for evidence review 1 are:

**Question 1.1**

*What are the most effective and cost-effective ways of providing information to change people's knowledge, awareness and behaviour and so prevent the first occurrence of skin cancer attributable to UV exposure?*

**Question 1.2**

*What content do effective and cost-effective primary prevention messages contain? What is the most effective and cost-effective content?*

Question 1.2 will be addressed by assessing the content of effective and cost-effective interventions identified in question 1.1.

#### 1.1.1 Evidence review 2

The primary research questions for the second evidence review are:

**Question 2.1**

*What factors help to convey information to prevent the first occurrence of skin cancer attributable to UV exposure?*

**Question 2.2**

*What factors hinder the communication of primary prevention messages?*

## 1.2 Secondary research questions

Secondary research questions reflect additional areas of interest to the reviews beyond the primary questions. They do not form the basis of the searches, but any studies that address the primary research questions will also be reviewed for evidence of any of the following.

Secondary research questions to be considered for evidence review 1 (covering research questions 1.1 and 1.2) are as follows.

1. Whether effectiveness and cost-effectiveness vary according to the diversity of the population (for example, in terms of the person's age, gender, ethnicity or individual risk factors such as history of lowered immunity or transplant, skin type or hair and eye colour, literacy levels or any physical and/or mental impairments) and whether the intervention is transferable to other population groups

2. Whether effectiveness and cost-effectiveness vary according to the status, knowledge and influence of the person delivering the intervention

3. Whether effectiveness and cost-effectiveness vary according to the way in which the intervention is delivered (for example, verbal information and advice, or via a leaflet)

4. Whether effectiveness and cost-effectiveness vary according to the relative effectiveness and cost-effectiveness of the content of different interventions the frequency, intensity and duration of the intervention

5. Whether effectiveness and cost-effectiveness vary according to where and when the intervention takes place (for example, a sports event at a school; or information for at those on holiday abroad), what season the message is delivered in and whether it is transferable to other settings (such as the NHS) or seasons.

6. The costs of the intervention

7. Which interventions are ineffective and/or not cost-effective

8. Any adverse or unintended effects (positive and negative) of the intervention.

Secondary research questions to be considered for evidence review 2 (covering research questions 2.1 and 2.2) are shown below.

iv. Any environmental, social and cultural factors (covering financial/human resource factors) that prevent or support the uptake of the information

v. Availability and accessibility for different populations

vi. Views about the content of information provided or the way in which it is conveyed

It is important to recognise that any evidence subsequently presented in relation to the secondary research questions is drawn from a limited pool of studies and cannot be considered on the same level as evidence about the primary questions.

## 2. Primary outcomes

Primary outcomes related to evidence review 1 (covering research questions 1.1 and 1.2) to be considered (but not limited to):

1. Reduction in the incidence of morbidity and mortality from non-melanoma and malignant melanoma skin cancer attributable to natural and artificial UV exposure. This may be measured in terms of a reduction in the incidence of sunburn or cumulative sun exposure.

2. Increase in knowledge and awareness that can lead to a reduction in the incidence of exposure/over-exposure to natural and artificial UV.

3. Changes in behaviours that can lead to a reduction in the incidence of exposure/over-exposure to natural and artificial UV.

4. Increase in knowledge and awareness of the ways to prevent non-melanoma and malignant melanoma skin cancer attributable to natural and artificial UV exposure. (For example, by wearing a hat in the sun, keeping in the shade, avoiding sunlight around the middle of the day, wearing protective clothing and appropriate use of a high protection 30+ sunscreen)

5. The contents of an intervention that is effective and cost-effective.

6. Any adverse or unintended (positive and negative) effects of the intervention

Primary outcomes related to evidence review 2 (covering research questions 2.1 and 2.2) to be considered (but not limited to):

1. Views and experiences of those planning and delivering prevention messages on the barriers and facilitators to practice and on how to overcome the barriers

2. The public's views and experiences of what prevents them from acting on prevention information – and on how to overcome those barriers.

## 3. Secondary outcomes

If a study is included on the basis that it contains data relevant to the primary research questions and outcomes, then data on any secondary outcomes considered relevant will also be reported. As such, secondary outcomes to be considered will be decided iteratively. Examples of secondary outcomes which may be identified include:

- Increase in knowledge and awareness of:
  - the causes of non-melanoma and malignant melanoma skin cancer attributable to natural and artificial UV exposure (such as sunburn).
  - risks associated with over-exposure to natural and artificial UV.
  - how to check for moles and/or where to get further advice and information.

## 4. Inclusion and exclusion criteria for evidence reviews 1 and 2

### 4.1 The inclusion criteria are as follows

- Populations to be included for both evidence reviews:
  - Everyone
- Interventions (universal and targeted) aiming at primary prevention of skin cancer (for both evidence reviews) are
  - One-to-one or group-based verbal advice (with or without use of information resources).
  - Mass-media campaigns.
  - Leaflets, other information or teaching resources or printed material including posters.
  - New media: the Internet (including social networking sites), emedia and text messaging.

They could be delivered in various settings (such as the NHS, schools and workplaces) or by a range of people (such as general practitioners, practice nurses, pharmacists, early childhood services, and teachers).

It is recognised that a range of other measures, including changes to the structural environment – and to policy and legislation – are worth assessing. However, these are not part of the referral received from the Department of Health and therefore are not included in the remit of this guidance.

- Comparator (for the first evidence review)
  - Current information provision, do nothing or any other intervention listed above
- Locations to be included (for both evidence reviews):
  - Developed/OECD countries
- Time period considered (for both evidence reviews)
  - 1990 onwards

### 4.1.1 Study types included for evidence review 1

- Effectiveness - primary level study designs
    - Randomised controlled trials (RCTs)
    - Longitudinal intervention studies (i.e. there is at least one follow up measure after baseline) such as controlled before and after, cohort, case control, before and after, and interrupted time series

- Economics - primary level studies.

(The inclusion criteria for effectiveness studies also apply here)

    - Randomised controlled trials (RCTs) with cost-effectiveness, cost consequences, cost benefit analysis (CBA), cost utility, cost minimisation or net monetary (cost) and benefit data – the perspective adopted (employer, societal, governmental) will not affect include/exclude decisions
    - Longitudinal intervention studies (i.e. there is at least one follow-up measure after baseline) with cost-effectiveness, cost consequences, cost benefit, cost utility, cost minimisation or net monetary (cost) benefit data
    - Decision analytic models and any other econometric and/or epidemiological models that contain relevant effectiveness and/or economic data or methods of analysis

- Review level studies – systematic reviews

The main aim of searching for systematic reviews is to identify primary studies – see 5.3 for further details.

    - Systematic review of effectiveness or economic RCT's and/or longitudinal studies or systematic reviews of both effectiveness and economic studies.
    - Systematic reviews must wholly or partly cover evaluative studies of interventions that are relevant to topic; at least one of the studies reported in the review must report on relevant outcome, the review must include at least one RCT or longitudinal study or one of the included economic study designs.

### 4.1.2 Study types included for evidence review 2

- Systematic reviews of qualitative research which uses a recognised, structured approach to identifying and synthesising studies (including, but not limited to, meta-ethnography, meta-study, meta-synthesis, narrative synthesis, etc). The main aim of searching for systematic reviews is to identify primary studies.

- Primary qualitative research designs which use recognised methods of data collection and analysis (including, but not limited to, observational methods, interviews and focus groups for the former and grounded theory, thematic analysis, hermeneutic phenomenological analysis, discourse analysis etc. for the latter.)

## 4.2 Study types to be tagged

- Primary studies including work-related costs and consequences which are neither comparative economic evaluations as defined above in the included economic primary studies nor effectiveness studies as defined in above included effectiveness primary studies which may be potentially relevant for supporting modelling work (once scope for modelling work has been defined).

- Papers/studies relevant for other evidence review (barriers and facilitators qualitative and effectiveness/cost-effectiveness evidence review)

## 4.3 Exclusion criteria are as follows

- Excluded population groups for both evidence reviews:
  - None

- Interventions, that are excluded for both evidence reviews are:
  - Secondary prevention (activities that aim to prevent a re-occurrence of skin cancer)

  - Primary prevention combining information provision with another type of intervention (such as changes to the built environment), where the outcomes related to information provision cannot be disaggregated from the other intervention/s.

  - Provision of sun protection, for example, protective clothing or sunscreen (for outdoor workers), or structural changes to the environment (to provide areas of shade, for example, in public spaces or school grounds).

  - Policy, legislative or fiscal changes. For example, raising the minimum age of sunbed use to 18 years, removing unsupervised and coin-operated sunbed facilities or reducing VAT on sunscreen products.

  - Activities which aim to assess or describe the incidences of skin cancer and/or the relationship between sun exposure and skin cancer and health.

  - Screening programmes (such as regional or national programmes to screen specific population groups for skin cancer).

  - The assessment of the accuracy of the content of effective information resources

  - Clinical diagnosis, treatment and management of skin cancer.

- Locations to be excluded for both evidence reviews:
  - Developing or non-OECD countries

- Study types excluded for both evidence reviews:
  - Studies which describe the relationship between sun exposure and skin cancer and health or the incidence of skin cancer (i.e. correlate studies or

non-evaluative studies of an intervention).

- Studies that deal solely with the clinical diagnosis, treatment and management of skin cancer
- Dissertations/thesis, books and book chapters
- Non-English language studies

### 4.4 Mixed interventions

Any study meeting all inclusion criteria except that it contains multiple components of interventions, will be checked to determine if it is possible to disaggregate the data. If the data for the relevant intervention type versus the relevant comparators can be extracted, the study will be included; if this is not possible it will be excluded. The number and type of papers falling into the latter category (i.e. excluded because it was not possible to disaggregate the data) will be listed in the evidence reviews. If the number of included studies identified is small, NICE will be consulted to determine if the mixed intervention studies need to be processed (quality assessment and data extraction).

### 4.5 Mixed populations

Any study meeting all inclusion criteria except that the aim of intervention is for the prevention of both the first occurrence of skin cancer and the reoccurrence of skin cancer, will be checked to determine if it is possible to disaggregate the data for primary prevention of skin cancer. If it is possible, the study will be included; if this is not possible it will be excluded. The number and type of papers falling into the latter category (i.e. excluded because it was not possible to disaggregate the data) will be listed in the evidence reviews. Any study meeting all other inclusion criteria but not clearly stating if the prevention of skin cancer is primary or secondary will be excluded, listed and briefly described in the evidence reviews. If the number of included studies identified is small, NICE will be consulted to determine if the mixed population studies need to be processed (quality assessment and data extraction).

## 5. Management of papers for evidence review 1

### 5.1 Selection of relevant studies:

- Checklists will be designed for screening titles and abstracts of primary studies on effectiveness, economic studies, and for systematic reviews – all based on

inclusion/exclusion criteria.

- Draft checklists for screening titles and abstracts will be sent to NICE (**1 September** at latest)
- Checklists approved by NICE (within **2 working days**)
- Titles and abstracts obtained in the searches will be screened for relevance using the checklists. An independent assessor to undertake a second screening of ten per cent of the papers.
- Full paper retrieval will be requested for all references marked as "relevant" during screening of titles and abstracts.
- Full paper screening checklists will be designed based on inclusion/exclusion criteria to identify those studies to be reviewed. For the first evidence review, this will include checklists for effectiveness and economic primary studies.
- Draft checklists sent to NICE (**22 September at latest**)
- Checklists approved by NICE (within **2 working days)**
- Obtained full papers will be screened for relevance using the checklists. An independent screener to undertake a second screening of ten per cent of the papers.
- All primary study papers assessed to be relevant will go forward for quality assessment and data extraction.
- The aim of checking systematic reviews is only to identify primary studies

## 5.2 Quality assessment and data extraction:

- Study type to be identified using the algorithm from 'Methods for development of NICE public health guidance' (Figure 4.1) (Issue Date: March 2006) or an adapted version (which will be agreed with NICE team).
- Quality assessment checklists from the current manual 'Methods for development of NICE public health guidance' (Issue Date: March 2006) will be used. If a study type for which quality assessment checklist is not available in current manual is identified, the new quality assessment checklist in the revised manual (Issue Date: October 2008) will be used. For economic studies the Drummond checklist will be used or adapted.
- Prepare draft evidence table using format in 'Methods for development of NICE public health guidance' (Issue Date: October 2008)
- Draft evidence tables will be sent to NICE (**10 October** at latest)
- NICE to agree final version of draft evidence (within **2 working days**).

- Submit draft evidence table with one study entered to NICE for comment (late October)
- Prepare evidence tables when format/level of detail etc. agreed.
- A reviewer to extract data for each full paper using an evidence table. Second independent reviewer to check data extraction. Any differences to be resolved by discussion with a third reviewer.
- Two independent assessors to assess the quality of each study. Any differences in quality assessment to be resolved by discussion with a third reviewer.
- External validity (i.e. applicability) of each study to be assessed according to the 'Methods for development of NICE public health guidance'.

### 5.3 Reference screening

- Reference lists on all full papers meeting all inclusion criteria to be sifted by the reviewer when extracting data to identify titles which may also be relevant to the research questions.
- Any additional references thought to be relevant will be checked against the Reference Manager databases of literature search results. Any references not identified in the Reference Manager databases will be added.
- The references obtained in this way will go through the same selection process as references identified in the literature searches.

### 5.4 References from experts

Any additional references submitted by experts, but not previously identified by formal searches or reference lists of the included papers, will be added to the Reference Manager database. Such references will go through the same selection process as references identified in the literature searches.

A list of the included studies will be sent to our identified clinical experts for identification of further studies.

### 5.5 Reporting

NICE will be consulted about the plans for narrative text, evidence statements and themes at an appropriate time prior to submitting each draft.

## 6. Management of papers for evidence review 2

The same procedure listed in Section 5 will be adopted for the second evidence review, except:

- Quality assessment checklists to be discussed and agreed during September 2008
- The relevant delivery dates will be as follows:

| Review tool | Date from PenTAG | Approval from NICE |
|---|---|---|
| Draft checklists for screening titles and abstracts & full papers | 22-Sept-08 | 2 days |
| Quality assessment tool | 20-Oct-08 | 2 days |
| Evidence tables | 17 Oct-08 | 2 days |
| Example completed evidence table | 17 Nov-08 | 2 days |

## 7. Economic evaluation

### 7.1 Existing economic analysis

Economic studies will be processed, summarised and analysed as outlined in above Section 5.

### 7.2 Economic modelling

It is likely that some form of *de novo* economic modelling may be required to supplement evidence review 1. The precise form of the model cannot be settled until the effectiveness and cost-effectiveness review are complete.

A proposal for the type of model required will be discussed with NICE health economist, developed, and sent to NICE for agreement no later than the time evidence review 1 is submitted.

## 8. Reporting

The two evidence reviews and the economic modelling will be prepared and submitted to NICE according to the following schedule.

| Report components | Submission of first draft to NICE | NICE deadline for responding to first draft | Submission of final review / analysis to NICE |
|---|---|---|---|
| Review 1: Combined effectiveness and cost-effectiveness | 5pm, 21st November 2008 | 5pm, 27th November 2008 | 5pm, 5th December 2008, could be later if needed, 23rd January 2009 at latest |
| Review 2: Barriers and facilitators | 5pm, 9th January 2009 | 5pm, 16th January 2009 | 5pm, 23rd January 2009, could be later if needed, 20th February 2009 at latest |
| Economic modelling | 5pm, 6th February | 5pm, 11th February | 5pm, 20th February 2009 |

| | | | |
|---|---|---|---|
| report | 2009 | 2009 | |

# Appendix 2 Search Strategy

The Medline search strategy provided below was used and then translated into the databases and interface versions listed (search date in brackets). All searches were limited to a publication date of 1990-current and an English language filter applied.

EMBASE 1980 to 2008 Week 38 via OVID online: (25 September 2008)

PsycINFO 1806 to September Week 4 2008 via OVID online: (25 September 2008)

The Cochrane Library 2008 Issue 3 via Wiley Interface online: (29 September 2008)

ASSIA via CSA web 111: (29 September 2008)

CINAHL via WEB 2.0 (OVID): (29 September 2008)

HMIC via Web 2.0 (OVID): (29 September 2008)

Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) 1950 to Present (25 September 2008)

1 skin cancer.mp.
2 exp skin neoplasms/
3 non melanoma.mp.
4 malignant melanoma.mp.
5 exp melanoma/
6 basal cell carcinoma.mp.
7 squamous cell carcinoma.mp.
8 exp carcinoma basal cell/
9 exp carcinoma squamous cell/
10 sunburn/
11 (sunburn or sun bed$ or sunbed$ or sunlamp$ or sun lamp$ or tanning or sun tan$ or suntan$).mp.
12 (sun expose or sun exposure or sun exposed).mp.
13 ultraviolet rays/
14 (utraviolet radiation or ultraviolet rays or ultraviolet exposure or uv rays or uv radiation or uv expos$).mp.
15 or/1-14
16 (prevent or prevents or prevention).mp.
17 exp primary prevention/
18 health education.mp.
19 health education/
20 health promotion.mp.

21 exp health promotion/
22 exp public health/
23 public health.mp.
24 exp preventive medicine/
25 campaign$.mp.
26 media.mp.
27 exp mass media/
28 program$.mp.
29 pamphlet$.mp.
30 publication$.mp.
31 leaflet$.mp.
32 pamphlets/ or publications/
33 internet/ or internet.mp.
34 computer communication networks/
35 cellular phone/
36 mobile phone$.mp.
37 health behavior/
38 poster$.mp.
39 (health or lifestyle).mp. adj3 ((information or social marketing or advice or knowledge or attitudes or awareness or behaviour).mp. or behaviour.tw.)
40 or/16-39
41 40 and 15
42 qualitative research/
43 ((focus or discussion) adj group).tw.
44 ((field or case) adj (stud$ or research)).tw.
45 (interview$ or qualitative).tw.
46 44 or 43 or 42 or 45
47 41 and 46
48 limit 47 to yr="1990 - 2008"
49 limit 48 to english language

# Appendix 3 OECD countries

Austria

Australia

Belgium

Canada

Czech republic

Denmark

Finland

France

Germany

Greece

Hungary

Iceland

Ireland

Italy

Japan

Korea

Luxembourg

Mexico

Netherlands

New Zealand

Norway

Poland

Portugal

Slovak republic

Spain

Sweden

Switzerland

Turkey

United Kingdom

United States

# Appendix 4 Screening checklists

## Checklist for abstract and full text screening

| | | | |
|---|---|---|---|
| Q1 | Is the full paper in English and published from 1990 onwards? | YES / UNCLEAR | Go to Q2 |
| | | NO | Exclude |
| | | | |
| Q2 | Was the study carried out in an OECD country? | YES / UNCLEAR | Go to Q4 |
| | | NO | Exclude |
| Q3 | Does the study address preventing skin cancer due to UV exposure? | YES / UNCLEAR | Go to Q3 |
| | | NO | Exclude |
| | | | |
| Q4 | Is this qualitative research?[1] | YES / UNCLEAR | Relevant |
| | | NO | Exclude |

[1] Including, but not limited to, observational methods, interviews and focus groups as methods of data collection and grounded theory, thematic analysis, hermeneutic phenomenological analysis, discourse analysis etc as methods of analysis

## Checklist for full text screening

| | | | | |
|---|---|---|---|---|
| | | | | RevMan code |
| **Q1** | Is the full text in **English**? | Yes | go to Q2 | |
| | | No | exclude | UD[2] 2 = EXCLUDED<br>UD 3 = LANGUAGE |
| | | | | |
| **Q2** | Was the paper **published 1990 onwards?** | Yes | go to Q3 | |
| | | No | exclude | UD 2 = EXCLUDED<br>UD 3 = DATE |
| | | | | |
| **Q3** | Was the location an **OECD[3] country**? | Yes | go to Q4 | |
| | | Unclear | go to Q4 | UD 4 = LOC |
| | | No | exclude | UD 2 = EXCLUDED<br>UD 3 = LOC |
| | | | | |
| **Q4** | **Population**: does the study address primary prevention of skin cancer caused by UV exposure? | Yes, only primary | go to Q5 | |
| | | Yes, primary AND secondary[4] | go to Q5 | UD 5 = POP |
| | | Unclear[5] | go to Q5 | UD 4 = POP |
| | | No | exclude | UD 2 = EXCLUDED<br>UD 3 = POP |
| | | | | |
| **Q5** | **Study design** | Qualitative[6] primary study | Go to Q6 | |
| | | Systematic review of qual. | Tag for refs | |
| | | other | exclude | UD 2 = EXCLUDED<br>UD 3 = DES |
| | | Effectiveness Study | Tag for Review 1 | |

[2] UD – User Defined field

[3] The list provided with the title and abstract screening checklist also applies here

[4] If a study meets all inclusion criteria except that it is unclear if the mixed population and /or intervention can be disaggregated, the study will be provisionally included and further assessed

[5] If a study meets all inclusion criteria except that information is unclear for one or more criteria, the study will be provisionally included and further information obtained

[6] Including, but not limited to, observational methods, interviews and focus groups as methods of data collection and grounded theory, thematic analysis, hermeneutic phenomenological analysis, discourse analysis etc as methods of analysis

| | | | | |
|---|---|---|---|---|
| **Q6** | **Content:** do the findings relate to barriers and facilitators of one of the following information sources about preventing skin cancer due to UV exposure?<br>• One-to-one or group-based verbal advice (with or without use of information resources),<br>• Mass-media campaigns,<br>• Leaflets, other information or teaching resources or printed material including posters,<br>New media: the Internet (including social networking sites), emedia and text messaging | Yes | | UD 2 = INCLUDED |
| | | No | exclude | UD 2 = EXCLUDED<br>UD 6 = CONTENT |

# Appendix 5 Quality appraisal tool

All questions are answered yes, no, can't tell or not applicable.

| 1 | Question | Is the research question clear? |
|---|---|---|
| 2 | Theoretical perspective | Is the theoretical or ideological perspective of the author (or funder) explicit?<br>Has this influenced the study design, methods, or research findings? |
| 3 | Study design | Is the study design appropriate to answer the question? |
| 4 | Context | Is the context or setting adequately described? |
| 5 | Sampling | Is the sample adequate to explore the range of subjects and settings?<br>Has it been drawn from an appropriate population? |
| 6 | Data collection | Was the data collection adequately described?<br>Was it rigorously conducted to ensure confidence in the findings? |
| 7 | Data analysis | Was there evidence that the data analysis was rigorously conducted to ensure confidence in the findings? |
| 8 | Reflexivity | Are the findings substantiated by the data and has consideration been given to any limitations of the methods or data that may have affected the results? |
| 9 | Generalisability | Do any claims to generalisability follow logically and theoretically from the data? |
| 10 | Ethics | Have ethical issues been addressed and confidentiality respected? |

**Source: Wallace et al 2004(Wallace et al. 2004)**

# Appendix 6 Extraction tables

| Study details | Research parameters | Population and sample selection | Outcomes and methods of analysis Findings | Notes |
|---|---|---|---|---|
| **Authors:** Carter<br>**Year:** 1997<br>**Citation:** Who wants to be a "peelie wally"? Glaswegian tourists' attitudes to sun tans and sun exposure.<br><br>**Quality score: (++, + or -)**<br><br>+ | **What was/were the research questions:**<br>To explore the social processes involved in the apparent contradictions between desiring a "healthy tan" and recognising this as risky behaviour.<br><br>**What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):**<br>NR<br><br>**How were the data collected:**<br>- **What method (s):**<br>2 stage – semi-structured interviews then focus groups.<br>- **By whom:**<br>NR – assume the author.<br>- **What setting(s):**<br>Glasgow, Scotland.<br>- **When:**<br>Interviews – 2nd half 1994.<br>FGDs - 1st half 1996 | **What population were the sample recruited from:**<br>People who regularly travel abroad for pleasure – interviews taken from clients of a travel health centre.<br>FGDs "naturally occurring groups" of young people and workmates who took at least one foreign holiday a year.<br><br>**How were they recruited:**<br>NR<br><br>**How many participants were recruited:**<br>26 Interviews (15 men, 11 women aged 20-35)<br>2 FGDs (2 men, 7 women; 3 men, 4 women)<br><br>**Were there specific exclusion criteria:**<br>NR<br><br>**Were there specific inclusion criteria:**<br>People who take foreign holidays. | **Brief description of method and process of analysis:**<br>Interviews used as pilot for the FGDs – to identify issues to be explored in more depth with the FGDs.<br>FGDs facilitated buy use of cards containing simple statements such as "I feel more healthy with a sun tan" – which were based on issues based on initial analysis of interviews.<br>FGDs tape recorded and transcribed.<br>Discussion of three themes was used in analysis: how sun exposure was situated in overall context of the holiday; attitudes to a sun tan connected with beliefs about health and beauty; actual techniques used to acquire a tan.<br><br>**Key themes (with illustrative quotes if available) relevant to this review:**<br>The act of sun exposure is a complex social process in which the tan emerges as a crucial symbol of tourist consumption. The author suggests this is more pressing for those who live where there is no guarantee of good summer weather.<br><br><u>Holidays and the sun tan</u><br>The sun is an important and influential element in many forms of tourist consumption. A sun tan was perceived as a necessary component of a holiday, before, during and after travel.<br>"Your clothes look good if you've got a tan…every summer before people go on holidays….everyone buys them in mind of when they've got a tan."<br><br>There was a dread of arriving on holiday without a | **Limitations identified by author:**<br><br>NR<br><br>**Limitations identified by review team**:<br>Mechanisms of recruitment not clear.<br>It's not clear where the three themes used in analysis were developed. There are few methodological references – and the main one does not contain any information about qualitative analysis. Post-modern understandings of consumption and risk are more evident.<br>No explicit reflexivity evident. Despite this the analysis is sophisticated and well described.<br><br>**Evidence gaps and/or recommendations for future research:**<br><br>NR<br><br>**Source of funding:**<br>NR |

| Study details | Research parameters | Population and sample selection | Outcomes and methods of analysis Findings | Notes |
|---|---|---|---|---|
| | | | tan.<br>"Female 1 …white legs come out I'm ashamed to be Scottish….it's like if you see a group of peelie wally people then they are Scottish.<br>Female 2 …It's embarrassing." (my edits)<br>Many used sun beds before going on holiday to avoid this.<br><br>"Holiday activities in many Southern seaside resorts are structured around a series of collective gazes in which the sun tan is a vital component." – for e.g. lying around in the sun, doing water sports and going out clubbing in the evening, where minimal dress is desirable. In the day, lying in the sun might be all there was to do.<br><br>On return from holiday the tan is a "symbolic artefact to take home… a symbolic souvenir" "a necessary symbolic good", indicating that you've been away and that there was good weather.<br>"Female 1: You're under pressure to get a tan…it's the first thing someone will say to you, "you've been away, you don't look very brown."<br>Female 2: First day back at work…everyone says "WOW! Have you been on your holidays?"<br><br><u>The sun tan: health and beauty</u><br>People feel more attractive and healthy with a tan and a tan is sought after in its own right.<br><br>"F: Your skin clears up and you looks an feel healthier….you're glowing."<br><br>As a symbol of health, the tan refers to a form of narcissistic self surveillance (Lasch, 1976). Consumer culture leads to a new relationship between the body and self – the "performing self…places greater emphasis on appearance, display and management of impressions" (Featherstone, 1982). Health may be becoming understood more as a function of appearance than | |

| Study details | Research parameters | Population and sample selection | Outcomes and methods of analysis Findings | Notes |
|---|---|---|---|---|
| | | | avoidance of danger.<br><br><u>Tanning techniques</u><br>All respondents reproduced health education advice about tanning with ease, and saw it as credible, but more immediate social pressures meant that much of this advice was ignored or discounted.<br><br>No one wanted to arrive on holiday looking pale, but sunbeds were thought to give the "wrong type of tan" and fake tan products were unpopular due to messiness, smell and "they look grim if you get it wrong." People therefore spoke of building up a tan quickly in the first few days of holiday.<br>"F: The first couple of days I want to burn because I find it goes into a golden colour in a couple of days."<br><br>Some avoided high SPF creams as they prevent a tan, or even cosmetics with SPF.<br>"M:…… I stand and look at the high factors and I always end up buying factor 4 or something….<br>F: I always think sun creams are going to stop me getting the ultimate tan." (My edits)<br><br>Despite this, people are concerned about skin cancer and aware of the links with sun exposure, believing that short intense exposure to strong sun was the most risky and expressing concern about, moles and skin blemishes. Many claimed to cover moles with total sunblock, one woman said she had photographed hers to monitor changes. One man suggested having skin specialists on beaches to check sunbathers – "mole patrols".<br>Such self monitoring and surveillance may be seen in terms of Foucault's "disciplinary gaze" but with the self replacing the state as surveyor and in which individualised can indulge in risky behaviour as long as they monitor themselves closely enough.. | |

| Study details | Research parameters | Population and sample selection | Outcomes and methods of analysis Findings | Notes |
|---|---|---|---|---|
| **Authors:** **Garvin & Eyles**<br><br>**Year:** **2001**<br><br>**Citation:** **Public health responses for skin cancer prevention: the policy framing of Sun Safety in Australia, Canada and England**<br><br>**Quality score: (++, + or -)** **++** | **What was/were the research questions:** To show how a single public health issue, skin cancer (or "Sun Safety"), identified at a global scale, has resulted in national policies containing subtle, yet very important, differences based on the place-specific framing of a public health problem.<br><br>**What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):** Analytic constructs of framing (developed from Goffman, 1974 by Entman, 1993) and narrative were employed to understand the differences in the construction of skin cancer public health policy. Framing is technique to define a problem, diagnose the cause(s), make a moral judgement on the issues and suggests potential remedies. Frame theory states that people in a given society share a set of symbols, beliefs and images that act as interpretive schemes for making sense of the world – these frames are interpretive constructs to order experiences in and responses to the environment. Over time, and through day to day activities of actors involved in the problem, issues and solutions become integrated into existing frames and develop story lines of their own which become the accepted definitions of problems and can be considered as policy | **What population were the sample recruited from:** Health promotion personnel, epidemiologist, dermatologists, atmospheric scientists.<br>**How were they recruited:** Continuous snowball sampling using the starting point of participation in international conferences on skin cancer in 1996.<br><br>Documents were obtained from participants, internet home pages, from recommendation from participants and from websites of major national health organizational for each country.<br><br>**How many participants were recruited:** 15 interviews<br><br>**Were there specific exclusion criteria:** NR<br><br>**Were there specific inclusion criteria:** NR<br><br>**Program description** *Sun Safety* is the set of primary health promotion messages that encourage | **Brief description of method and process of analysis:** Interviews took an informal conversational format using open ended questions (Patton, 1990) and they covered evolution of the policy, involvement in the programmes, opinions about the policy process and programme development. Interviews were taped and transcribed. Transcriptions entered into NVivo and coded in 2 ways. Firstly, data were coded by date to establish a flow of events up to existing policies and create a case record, consisting of timelines that were cross checked against materials to verify the date and the activity. Secondly, the framing locations (*communicators, text, receivers and culture*) identified in the interviews were labelled. These were compared against time lines for each country, and then compared across countries. PI coded independently and was cross checked by a second researcher.<br><br>Policy documents were reviewed to corroborated information provided by the interviews.<br><br>**Key themes (with illustrative quotes if available) relevant to this review:**<br><br>A different narrative is embedded in each national policy. Social political, cultural and historical contexts within which policy making takes place frame the problem and constrain and limit both problem definition and potential policy making solutions. See table below for a summary.<br><br>*Communicators* | **Limitations identified by author:** NR<br><br>**Limitations identified by review team**: Due to the analytic style and, perhaps, the large amount of data reviewed and the detail about the methods provided, there is no use of direct quotes from material or interviews so no immediate method of checking the validity of the interpretations. Despite this the analysis is coherent and credible.<br><br>**Evidence gaps and/or recommendations for future research:** This is snapshot of Sun Safety issues between 1996 and 1998 and policy issues evolve – for eg, recent uncoupling of Canadian message form ozone depletion concerns, use of UV index in the UK and reassessment by Australia in relation to plateau-ing of skin cancer rates.<br><br>**Source of funding:** Social Sciences and |

| Study details | Research parameters | Population and sample selection | Outcomes and methods of analysis<br>Findings | Notes |
|---|---|---|---|---|
| | narratives.<br>In highly contested areas, competing frames may vie for control of the dominant narrative.<br>According to Entman, an issue is continually framed and re-framed with *communicators* describing what to say based on underlying belief systems; the *text* contains messages containing keywords, images and other thematic reinforcements of specific facts or judgements. The *receiver*'s thinking is guided by social context, and may or may not reflect the thinking of communicator or text. *Culture* is the stock of commonly invoked words and mages that reflect the common discourse or thinking of a group.<br><br>**How were the data collected:**<br>- **What method (s):**<br>Expert interviews (telephone and face to face)<br>Policy document analysis.<br>- **By whom:**<br>NR<br>- **What setting(s):**<br>Canada, Australia & England<br>- **When:**<br>Sun Safety programs in 1996-1998 | individuals to decrease exposure to the sun's harmful rays by protective and avoidance methods – avoiding the hottest part of the day, covering up with clothing and hats, using sunscreens and seeking shade when possible. | In UK reflect strong centralised agency and the use of trained personnel, similar in Australia. In Canada, much more disparate and no use of marketing specialists.<br><br>*Text*<br>Australian programmes started much earlier (80s rather than 90s with Slip Slap Slop) and core messages are to cover up and to avoid the sun during peak hours. There is evidence of less tolerance towards deeply tanned skin. In addition, the scale of the problem with much of the population at high risk permits strong, authoritarian messages.<br>Canadian projects show similar messages to Australia, but different in their link to environmental concerns about a depleted ozone layer, and also no attempt to address the social desirability of a tan.<br>Suggest that UK programs such as "Are you dying to get a suntan" (aimed at young women) had little effect because they fail to address the desirability in Britain of gaining a tan "for health and beauty". Other programmes focus on not burning, seeking moderate exposure and responsible behaviour over total avoidance.<br><br>*Receivers*<br>Skin cancer in Australia has been visible for decades, and many people have had personal experience of cancer or someone affected by skin cancer, so most are sensitised to messages about it.<br>In Canada, increasing visibility of skin cancer incidence in the early 90s occurred at the same time as increasing concern about the depleted ozone layer. There is also an increased tendency to holiday in warmer places, especially in the winter, increasing exposure. However, sensitivity to increasing rates of skin canner remains quite low. | Humanities Research Council (Canada) doctoral fellowship and by the Eco-Research Program in Environmental Health at McMaster University. |

| Study details | Research parameters | Population and sample selection | Outcomes and methods of analysis Findings | Notes |
|---|---|---|---|---|
| | | | Little concern in England compared to other public health messages, and rates are lower than in hotter climes – public largely sceptical. Population increasingly seeks warm holiday locations. Programmes were implemented in response to government mandates such as Health of the Nation. Credibility is recognised by personnel that abstinence messages will be ignored due to the climate and the anticipation of summer.<br><br>*Culture*<br><br>Institutional regulatory culture in the UK with mandated policy targets such as those in Health of the Nation, but little regulatory control around sun safety products.<br>Australian structures are strong and seen as credible. Sun safety products on sale are highly regulated – limiting claims on products and restricting SPF factors available. In addition, institutional changes have been seen such as "no hat – no play" in schools, provision of structural shade and school rescheduling sports outside the 11-3pm times. | |

Framing and narratives of Sun Safety in Australia, Canada and England (table reproduced verbatim)

| | Australia | Canada | England |
|---|---|---|---|
| *Framing locations* | | | |
| Communicators | Marketing/ health promotion specialists | Coalition of Drs, companies and public health | Marketing/ health promotion specialists |
| text | Strict avoidance and protective measures | Personal protection and environmental change | Moderation and reasonable behaviour |
| Receivers | Sensitized to skin cancer prevention messages | Sensitized to the environmental messages | Not sensitized to skin cancer, do not want to hear avoidance messages |
| Culture | Grants regulatory control to authorities | Little regulatory control granted to authorities | Target setting by agencies |

| *Resultant narrative* | | | |
|---|---|---|---|
| The problem | Skin cancer as social problem | Skin cancer is an environmental problem | Skin cancer is a growing public health problem |
| The solution | Everyone must be vigilant: must reduce social acceptance of tanned skin | Personal protection (sunscreen) and environmental rehabilitation | Moderate exposure and reasonable protective behaviours |

| Study details | Research parameters | Population and sample selection | Outcomes and methods of analysis Findings | Notes |
|---|---|---|---|---|
| **Authors:**<br>**Geller et al**<br>**Year:**<br>**2008**<br><br>**Citation:**<br>**Multiple levels of influence on the adoption of sun protection policies in elementary school in Massachusetts. Arch Dermatology 144 (4): 491-496**<br><br>**Quality score: (++, + or -)**<br>**-** | **What was/were the research questions:**<br>To understand the factors that may influence sun protection policy development in elementary schools that would be required if the CDC guidelines were to be implemented.<br><br>**What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):**<br><br>NR<br><br>**How were the data collected:**<br>- **What method (s):**<br>Interviews with individuals or two people.<br>(survey data also collected – not reported here).<br>- **By whom:**<br>NR<br>- **What setting(s):**<br>Massachusetts.<br><br>- **When:**<br>NR | **What population were the sample recruited from:**<br>Elementary school superintendents, principals, teachers, school nurses, parent-teacher organisation presidents & chairs.<br><br>**How were they recruited:**<br>Not clear - 381 districts put into 9 categories based on student enrolment and income. "within each district, we chose to interview representatives of elementary schools."<br>Not clear if all approached took part?<br><br>**How many participants were recruited:**<br>9 superintendents, 18 principals, 18 school nurses, 16 PTO presidents.<br><br>**Were there specific exclusion criteria:**<br><br>NR<br><br>**Were there specific inclusion criteria:**<br>NR | **Brief description of method and process of analysis:**<br>Full outline of questions provided.<br>Interviews audiotaped and transcribed.<br>Initial reading and re-reading to identify brad themes. After these were identified, systematic line-by line coding "based on an initial theory driven code list". NVivo used to facilitate analysis. 2 staff members coded and discrepancies addressed and resolved.<br><br>**Key themes (with illustrative quotes if available) relevant to this review:**<br><u>Attitudes toward sun protection policies.</u><br>Skin cancer prevention was not high priority – because<br>- pupils had limited time outdoors and<br>- there was lack of funding for health classes.<br>Barriers to adopting school based policy were:<br>- Teachers and parents too overwhelmed to make the effort and<br>- finding funding.<br><br>There was interested and openness to the idea however.<br>The term "policy" was felt to imply legislative mandates and regulation, so "practices" was preferred.<br><br><u>Curriculum</u><br>Integrated sun protection information into health education, physical education or science courses.<br>Challenges included:<br>- who would teach it due to lack of time,<br>- what grades be taught<br>- what lessons should be chosen<br>- how often to teach. | **Limitations identified by author:**<br>Available funds were a concern, but ideas for funding beyond fundraising wee not explored.<br>Administrators in charge of buildings were not interviewed.<br>Use of only 9 districts may not be representative.<br>Formal validation of responses not attempted.<br>All expressed willingness to adopt a sun protection policy but no school had one – social desirability bias is a possibility.<br><br>**Limitations identified by review team**:<br>Not clear what is meant by "theory-driven code list" here – were the thematic headers reported derived from existing literature or conceptual framework?<br>No quotes are provided, hampering any assessment of the validity of the findings<br>Despite long lists of possible activities reported, there seems to be much resistance to their implementation and many are regarded as impractical.<br>Analysis is descriptive rather than explanatory.<br>**Evidence gaps and/or** |

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| | | | Environment<br>Improvements suggested were planning shade trees, building shade structures, incorporating shade into any renovation or new building.<br>Costs were the main barrier to expanding and it was seen as unrealistic to change shade. Possible locations were also unclear.<br><br>Scheduling<br>- Limited scheduling options to avoid 10am to 2pm.<br>- Lack of flexibility in schedules.<br>- Time to apply sunscreen.<br>- Limited resources to address all issues by which schools are “bombarded”.<br>- It was thought that the amount of time spent outdoors was insufficient to cause significant risk.<br><br>Community<br>Several possible locations for distributing sun protection information were suggested.<br>But drawbacks such as low attendance at community events and perceived low priority of skin cancer in most families were raised.<br><br>Sunscreen<br>Possibilities included getting pupils to bring their own sunscreen or having school provided pumps in classroom, with teachers encouraging use before outdoor activities. Alternatives were getting parents to apply sunscreen before school and including questions about allergies on health questionnaires.<br>Challenges:<br>- Nurses and teachers were concerned about availability and efforts to apply before outdoor activity.<br>- Monitoring sunscreen use<br>- Sunscreen allergies<br>- Parental permission for use<br>- Expense. | **recommendations for future research:**<br>NR<br><br>**Source of funding:**<br>Curt & Shonda Schiiling SHADE foundation |

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| | | | School staff<br>Staff need training.<br>There is an issue about staff liability in the event of sunburn, allergies to sunscreen etc.<br><br>Communication<br>A key issue in the implementation of sun protection policies is communication with parents.<br>Staff suggested a number of ways of doing this however, parental participation presented a major challenge. | |

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| **Authors:** **Gerbert et al** **Year:** **1996** **Citation:** **Attitudes about skin cancer prevention: a qualitative study.** **J Cancer Education 11(2): 96-100**<br><br>**Quality score: (++, + or -)**<br><br>**+** | **What was/were the research questions:**<br>To explore why people do or do not engage in skin cancer prevention.<br><br>**What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):**<br>NR for methods.<br><br>Findings are discussed in relation to the Health Belief Model (HBM).<br><br>**How were the data collected:**<br>- **What method (s):**<br>Focus group discussions (FGDs)<br><br>- **By whom:**<br>NR<br>- **What setting(s):**<br>University of California, San Francisco, USA.<br><br>- **When:**<br>June 1994 | **What population were the sample recruited from:**<br>Students.<br><br>**How were they recruited:**<br>Convenience sample of 56 screened. Method of contact not clear. After exclusions, 33 did a screening questionnaire allowed them to be categorised into "low concern" group (LC) (who did not practice sun protection) and a high concern (HC) group who did, and were invited to participate.<br><br>**How many participants were recruited:**<br>16.<br>6 in the high-concern, and 10 in the low concern group.<br><br>**Were there specific exclusion criteria:**<br>Those reporting that their skin rarely or never burnt, refusal.<br><br>**Were there specific inclusion criteria:**<br>NR | **Brief description of method and process of analysis:**<br>2-hr FGDs were audiotaped, and brief field notes written after the session. Tapes transcribed, and these were read and coded independently by the team for attitudes, beliefs and practices about skin cancer protection. These were then discussed and ideas generated as a group. Important and frequently mentioned ideas (such as knowledge of skin cancer and experiences of it) were grouped together into categories. Themes form the 2 groups were compared.<br><br>**Key themes (with illustrative quotes if available) relevant to this review:**<br>7 themes:<br><u>Benefits of sun exposure</u><br>Sun exposure made LC respondents feel good – looking and feeling better, looking & feeling healthier, improved self esteem, getting vitamin D, enjoying the outdoors.<br><br>"It makes you feel healthier when you're out in the sun."<br><br>HC group mentioned positives but also indicated awareness of risks, and trying to change those beliefs.<br>"I'm trying to change. The more movie stars I see that have real white faces…but its hard [and] sometimes I get a little sun and I think "Oh, this looks great." (RG edits)<br><br><u>Salience of skin cancer prevention</u><br>Most in the LC group did not think about using sunscreen and many had been sunburned.<br><br>HC group thought about sunscreen, agreed it was important and were more likely to use sunscreen for everyday exposure, although this was mixed. | **Limitations identified by author:**<br>Non generalisable due to method and sample size.<br><br>**Limitations identified by review team**:<br>Not clear how the initial contact was made.<br>Not clear how thematic categories were developed but there were multiple coders.<br>Not all the differences reported between the two groups seem solid – may not be appropriate to try to do this kind of comparison using this method?<br>Contradictory comments re transferability as suggestions for future media campaigns are made while methods derided for its lack of gereralisability.<br>**Evidence gaps and/or recommendations for future research:**<br>Authors suggest larger and more diverse samples, and use of theories such as the HBM.<br><br>**Source of funding:**<br>NR |

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| | | | "On a bright day I will generally do it, but I'm less thoughtful on overcast days."<br><br><u>Perceived seriousness of the sun's harmful effects</u><br>LC group could easily list negative consequences of sunlight, but did not view these as serious.<br>"I'll deal with it when it happens, you know, 50 years or so."<br>In some cases, aging & skin damage was considered more "real" and serious than skin cancer.<br><br>HC group considered the harms of sunlight to be potentially serious, although they were mixed as to whether cancer or aging was the most serious. Concern about aging might motivate skin cancer prevention behaviour.<br><br><u>Personal connection to skin cancer</u><br>In the LC group – one participant had any contact with skin cancer – a form that was easily managed.<br><br>In the HC group, many knew people who had cancer or precancerous moles. The later discussed in the context of their own moles and lesions.<br><br><u>Media attention regarding skin cancer</u><br>LC group suggested that the attractiveness of a tan was the main media emphasis, and only one mentioned negative media content.<br>"When there was first the big scare about the hole on the ozone layer, abound how we were all going to get skin cancer…for a while I was wearing sunscreen…But that lasted maybe three weeks." (my edit)<br><br>The HC groups were aware of a great deal of publicity about the negative effects of sunlight, which motivated sunscreen use.<br><br><u>Problems with sunscreens</u> | |

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| | | | LC group listed numerous problems associated with sunscreen (unprompted) – cost, potential carcinogens, oily, messy, drying etc to wear & a hassle to put on. Also seen to get in the way of getting a tan and one was "too lazy" to use it.<br><br>HC group had to be prompted to mention negatives – although these were similar.<br><br><u>Prevention "have-tos"</u><br>Both groups noted that there were many "have- tos" in health promotion messages.<br><br>"It's a constant barrage of "do this, do that""<br><br>Skin cancer prevention was often not on the personal lift of "have-tos" of LC group.<br>For the HC group, it was on the list, if not at the top.<br><br>Findings are discussed in relation to the Health Belief Model of prevention:<br>• Perceived susceptibility to illness<br>• Perceived severity to illness<br>• Perceived benefits of taking action<br>• Perceived barriers to preventative action<br>• Cues to action<br><br>Those who know people who have been affected by skin cancer have increased perceptions of susceptibility, and their ideas about the seriousness fit with perceived severity. Views that sunscreen would protect against wrinkles, and cancer indicate potential benefits, while love for sun, perceived benefits of sun, negative aspects of sunscreen are barriers to action. Finally, perceptions of media are cues to action.<br>All areas need attention in the future to enhance protective behaviour. | |

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| **Authors: Gillespie et al**<br>**Year: 1993**<br><br>**Citation: Qualitative Methods in Adolescent Skin Protection. Health Promotion Journal of Australia. 3 (3): 10-14**<br><br>**Quality score: (++, + or -)**<br><br>**-** | **What was/were the research questions:**<br>Describes the first phase of a larger project to develop and evaluate a comprehensive school based sun protection intervention.<br><br>**What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):**<br>Mixed methods.<br><br>Health belief model (HBM) informs the questions and analysis framework<br>**How were the data collected:**<br>- **What method (s):**<br>36 focus group discussions (FGD)<br><br>- **By whom:**<br>Trained Heath education consultants in each region (n=12)<br><br>- **What setting(s):**<br>In school.<br><br>- **When:**<br>NR | **What population were the sample recruited from:**<br>School grades 3, 5, 7 (primary), 8, 9, 11 (secondary) (average age 8-16) from 24 schools across the state of Queensland, Australia<br><br>**How were they recruited:**<br>Students were randomly selected from class lists.<br><br>**How many participants were recruited:**<br>6 groups from each of the 6 school years. No more than 10 per group.<br><br>**Were there specific exclusion criteria:**<br>NR<br><br>**Were there specific inclusion criteria:**<br>NR | **Brief description of method and process of analysis:**<br>Semi-structure topic guide. With questions based on the health belief model (the themes are also reported based on these topic areas).<br>Data analysed by age – primary grades 3-5, transition grades 7&8, secondary grades 9-11.<br><br>**Key themes (with illustrative quotes if available) relevant to this review:**<br><br><u>Knowledge</u><br>All grades had high and similar general knowledge of sun protection.<br>From early grades students knew about damaging effects such as sunburn, heat stroke, dehydration, sun spots, heat rash and even melanoma. Older students seemed more aware of melanoma and high skin cancer rates in Queensland.<br>All were aware of the advantages of being protected form the sun when outside.<br>Teachers, family and friends were important sources of sun protection information. Older students preferred to listen to peers while primary children relied on authority figures.<br>Mass media sources were seen as credible, but not the most important.<br><br><u>Severity and susceptibility</u><br>Older students were more likely to know of an older person who had experienced skin cancer of some form.<br>All three age groups saw skin cancer as a problem of adulthood and did not report worrying about experiencing it themselves.<br>All felt that fair skinned people had the most to worry about, and many thought that their skin was more resilient.<br>Older students were more concerned about whether they had a good tan than about adverse effects of the sun.<br><br>Personal susceptibility is not a strong motivator for sun protection for young people. | **Limitations identified by author:**<br>NR<br><br>**Limitations identified by review team**:<br>The aim is not very clear – as it is not describes how the findings are expected to influence the programme.<br>Very few details about methods are provided, for example, it isn't clear how the children were recruited, it is not known if the groups were recorded, no details about how the FGDs were analysed, or by whom, is given. It seems to be a sort of framework analysis, based on the 5 motivation of the HBM, though this isn't named.<br>Analysis is descriptive rather than explanatory.<br>There are few quotes – none at all in relation to most of the themes, making it difficult to assess validity.<br>No ethical issues about researching with children are outlined. It isn't clear if they could refuse to take part. No mention of parental or child consent is made.<br><br>**Evidence gaps and/or recommendations for future research:**<br>NR |

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| | | | The authors suggest that a focus on short term effects such as appearance, might be more pertinent in messages aimed at young people & that closer examination of their skin type might also help them to make informed decisions.<br><br><u>Perceived benefits and barriers in sun protection</u><br>Perceived benefits of sun protection are outweighed by perceived barriers. All students expressed the main benefits of sun protection in terms of immediate concerns rather than long term damage, avoiding being "hot and sweaty", and having the "sun in your eyes".<br>Protective clothing was disliked because it added to the discomfort of already extreme heat.<br>The winter was thought "hardly hot enough to worry about sun protection."<br><br>Being outdoors was generally perceived as being more fun, offering greater freedom and being healthier than being indoors, especially by younger children.<br><br>Sunscreen was not worn because:<br>"it takes too long"<br>"I thought I'd only be out for a short time."<br><br>Some found sunscreen irritating (to eyes and mouth) and easier to remember if they were going to be in the sun all day (at the beach or sports day).<br><br>Most of the barriers at school relate to structural characteristics of the school system.<br>While there was shade at school, this was hard to use sometimes.<br>It was difficult to avoid midday sun as this was lunchtime, and when playing sport.<br><br>Sun protective clothing and hats were more acceptable if they were fashionable.<br>The desire for a "good tan" is a strong and consistent barrier to sun protection and this was evident in primary school, increasingly important for older students who were more concerned about a good tan than about adverse | **Source of funding:**<br>NR |

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| | | | effects or skin cancer.<br><u>Cues to action and reinforcement</u><br>Older students believed that a tan would make them more attractive and reference was made to the appeal of media images.<br>Primary students reported more influence by parents and teachers about behaviour in the sun – hats are compulsory for outdoor activities in primary schools but not secondary schools.<br>Parents mostly provide positive reinforcement for sun protection and most students thought their parents were not interested in getting a tan – some were careful due to having been treated for skin cancer.<br>Three groups indicated they would encourage friend to cover up if they were getting sunburned but this was commoner in younger pupils.<br><u>Current behaviour and norms</u><br>Many activities were undertaken outdoors and older students were more likely than younger to be outdoors without engaging on any particular activity. Clubs and facilities used may be possible sites for sun protection promotion.<br>Primary students than were more likely than secondary to wear hats last time they were in the sun. Older students were more likely to report not using sun protection the last time they were in the sun.<br>Inconsistent behaviour was reported, with transitional students (years 7&8) showing rebellious factors – wanting to defy parents and teachers. | |

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| **Authors: Glanz et al**<br>**Year: 1999**<br>**Citation: Formative research for developing targeted skin cancer prevention programs for children in multiethnic Hawaii. *Health Services Research* 14 (2): 155-166**<br><br>**Quality score: (++, + or -) +** | **What was/were the research questions:**<br>Formative research to help design a successful skin cancer prevention program - *SunSmart*.<br>Aims were to:<br>- collect data that would help to formulate a successful program.<br>- help contribute to a broader base of knowledge about children's, parents and recreations staffs' beliefs and behaviours related to skin protection.<br>Objectives were to:<br>-learn what the children, parents and caregivers in Hawaii knew, thought and did about skin cancer and sun protection.<br>- get ideas from the target audiences about the appeal and feasibility of various educational materials, strategies and sun safety policies.<br><br>**What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):**<br>Not for methodology. Miles and Huberman | **What population were the sample recruited from:**<br>Children and their parents form 3 public and one private elementary schools in Hawaii, recreation staff from the private school and the YMCA.<br><br>Children 53% boys, 1/3 Caucasian, 1/3 fair skinned Asian or mixed, 1/5 dark skinned Asian/ Filipino/ Native Hawaiian (as judged by session observers).<br>Parents 87% female. Caucasian (27%), Filipino (40%), Japanese (13%), Native Hawaiian mixed (20%).<br>Recreation staff 48% men, 48% Caucasian, Japanese (24%) Filipino 12%, Native Hawaiian, mixed, other (16%).<br><br>**How were they recruited:**<br>Purposive samples in terms of ethnicity, | **Brief description of method and process of analysis:**<br>All sessions were tape recorded. There were 2 observers present as well as pairs of moderators. The former completed observation protocols, took notes on ideas and comments of participants. Classroom teachers were also present which "did not seem to inhibit discussion among the first through third grade children."<br>The quantitative surveys were used to stimulate discussion in the groups.<br>Children's groups began with a hat-making activity and by asking children to tell their names and favourite games.<br>Discussion guides included constructs from the SCT and HBM "so that it would be possible to evaluate the constructs applicability to the program."<br>Parent, child and recreation leader guides were parallel but separate.<br>Participants received Sun Safe gifts at the end.<br>Children's groups were not transcribed as they were very fast and the groups were large, so thought not to be helpful.<br>Analysis focused on looking for patterns to identify themes that were common to several participants.<br>Multiple people reviewed the notes and transcripts, and initial analysis was done blind by one person who was present and one who was not.<br>Where linked, the quantitative data was used to help interpret qualitative findings.<br><br>**Key themes (with illustrative quotes if available) relevant to this review:**<br>All groups expressed a general feeling that using sunscreen was, by itself, the most important practice.<br>In relation to HBM:<br>Risk/severity - children do not understand what skin cancer is or risk of cancer, therefore any messages that address cancer should address adults first.<br>Barriers – long sleeves and wide-brimmed hats seen by children as too extreme.<br>Benefits – most comments were about sunscreen, so more mention of other methods should be made.<br><br>In relation to SCT:<br>Roles – parents were central, recreation staff were willing to be role model.<br>Social norms – need to promote acceptable change, as most are used to light dressing and there is a mix of light and dark skin tones in the population.<br><br>(Table reproduced verbatim) | **Limitations identified by author:**<br>Data extrapolated form the parents are based on a small non-randomly selected number of participants.<br><br>**Limitations identified by review team**:<br>Aims and objectives are given, not clear why - they have reworded them, and changed the order, but they are very similar, but not identical.<br>The impact of not transcribing the children's groups is not clear – presumably the observer's notes were the data, although if the discussions were as fast moving as suggested, data may well have been lost.<br><br>**Evidence gaps and/or recommendations for future research:**<br>Future studies may need more aggressive recruiting strategies to include more parents. |

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<td>(1994) are referenced in relation to the triangulation potential of mixed methods.<br><br>Social Cognitive Theory (SCT) and Health Belief Model (HBM) provided the framework for the research overall.<br><br>Social Cognitive Theory suggests that behaviour is influenced by social and physical environments, along with the features of the behaviour.<br>In this context, this might include personal behaviours, role models, perceived norms and the availability of sunscreen and shaded areas.<br><br>HBM constructs of particular interest are perceptions of susceptibility, perceived severity, and the benefits to and barriers to sun protection behaviours.<br><br>How were the data collected:<br>- What method (s):<br>Mixed methods – quantitative (survey on</td>
<td>rural or urban locations and public or private schools.<br>Schools were recruited by contacting principals and classes were selected by them.<br>Intact classes preferred as the most comfortable environment for students.<br>Informed consent sought from parents.<br>Parents recruited by letter sent with the consent forms for the children.<br><br>How many participants were recruited:<br>216 children (in 12 groups of 8-28)<br>15 parents (5 groups, interviews at 2 schools where there were too few participants for a group)<br>27 recreation staff (3 groups of 8-11)<br><br>Were there specific exclusion criteria:<br>NR</td>
<td colspan="4">
<table>
<tr><th>Issue or concept</th><th>Observation</th><th>Supporting comments of conclusion</th></tr>
<tr><td>Children</td><td></td><td></td></tr>
<tr><td>Perceived Risk</td><td>Risk of sunburn is high</td><td>Sunburn is uncomfortable, but lasts only a few days</td></tr>
<tr><td>Perceived Severity</td><td>Consequences of skin cancer misunderstood by children</td><td>‘Its when you get sunburned all over you’<br>‘Its when you go out in the sun and get sun spots’<br>It gives you a bad headache and you can’t think of anything’</td></tr>
<tr><td>Barriers to sun protection</td><td>Protective clothing uncomfortable in hot weather</td><td>‘Long sleeves are too hot and make you tired’<br>‘Tank tops are cooler, more comfortable’<br>‘With long pants you get all hot and sweaty’<br>Wide brim hats…ugly, itchy, get in the way during sports, don’t stay on when you run</td></tr>
<tr><td>Benefits of sun protection</td><td>…….</td><td>……..</td></tr>
<tr><td>Role models</td><td>Parents determine clothing they wear</td><td>Parents tell them what to wear or may tell them to change</td></tr>
<tr><td></td><td>Parental guidance most important</td><td>Listen mostly to parents’ guidance</td></tr>
<tr><td></td><td>Non-parental role models ok</td><td>Coaches, teachers, lifeguards and ‘Summer Fun’ leaders are people they would listen to and imitate</td></tr>
<tr><td>Perceived norms, support</td><td>Sunscreen more important at beach</td><td>Most kids do not use sunscreen when they go out to play</td></tr>
<tr><td></td><td>Dependent on parents/family for sunscreen</td><td>Parents and relatives apply sunscreen, but older kids apply it themselves more often</td></tr>
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<td>Source of funding:<br>Department of health, State of Hawaii and Chronic Disease Prevention Control Program of CDC.</td>
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<tr><td></td><td>demographics and sun protection and exposure habits – children's survey used pictures) and qualitative.<br>12 Group discussions, 5 focus group discussions (FGDs) &<br>3 semi-structured interviews<br>- By whom:<br>Pairs of trained moderators with health promotion experience.<br>- What setting(s):<br>Children at school, in classroom or out of it depending on proportion of class participating. Parents at school during lunchtime or evening. Recreation leaders at the private school. Schools were on one of two Hawaiian islands<br>- When:<br><br>Details of the skin prevention programme<br>SunSmart is a skin cancer prevention programme in Hawaii designed for elementary school in grades 1-3 (aged 6-8), together with their parents and recreation leaders. Long term goal is to disseminate effective</td><td>Were there specific inclusion criteria:<br>NR</td><td colspan="4"><table>
<tr><td>Environmental supports</td><td>……</td><td>……</td></tr>
<tr><td>Issue or concept</td><td>Observation</td><td>Supporting comments of conclusion</td></tr>
<tr><td>Views on: educational material and strategies, sun safety polices</td><td>Learning should be fun and relevant</td><td>Would join in fun activities, like the hat-making game, to learn about sun safety</td></tr>
<tr><td>Parents</td><td></td><td></td></tr>
<tr><td>Perceived risk</td><td>Exposure leads to resistance</td><td>'The children are always in the sun and they rarely get sick…the more exposure they get whatever, the more resistant they are'<br>'For us Filipinos, we have this belief that if you expose the children early to the sun, the more resistant they are'</td></tr>
<tr><td></td><td>No risk/no protection needed in the winter</td><td>'During the winter I don't use sunscreen, but in the summer I do'</td></tr>
<tr><td>Perceived severity</td><td>Skin cancer not very serious</td><td>Belief that getting 'spots removed' is treatment or cure</td></tr>
<tr><td>Barriers to sun protection</td><td>Barriers to applying sunscreen on kids</td><td>Expensive, inconvenient, time consuming/too busy<br>'The reason I don't put it on my oldest is because he complains so horribly and he's always in such a hurry'<br>Did not know where to buy sunscreen (one parent)</td></tr>
<tr><td>Benefits of sun protection</td><td>Starting at an early age</td><td>For the kids, starting young makes it easier</td></tr>
<tr><td>Role models</td><td>Parents should be role models</td><td>Know they do not model sun-safe habits for their kids</td></tr>
<tr><td>Perceived norms, support</td><td>Sunscreen use not a norm in Hawaii</td><td>'You rarely see local people putting on sunscreen'</td></tr>
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| | skin cancer prevention programs statewide. Recreation leaders include lifeguards, coaches and "summer fun" leaders at YMCA and parks based day camp programs. Objectives of *SunSmart* are: 10 To increase awareness, intentions, skills and practices among parents, recreations staff and 6-8 year old children. 2) To increase environmental supports and policies to promote skin cancer prevention in outdoor recreations settings for youth. | | | | 'The majority of people I know don't even think about it….I just don't think about it' | |
| | | | Environmental supports | Make adopting sun safe habits easier | Easier to get children to follow sun safety practices if it is a routine part of recreation or school programs | |
| | | | Issue or concept | Observation | Supporting comments of conclusion | |
| | | | Views on: education materials and strategies, sun safety policies | Supportive of parent, child education, school policy initiatives | 'I think you gotta educate the parents first and tell them of the consequences'<br>'I think you should do more stuff in school!'<br>Stronger policies, like including it in school or day camp<br>Back-packs are a good idea<br>Could include in cost of sport uniforms and supply fees | |
| | | | Recreation Staff | | | |
| | | | Perceived risk | If I do not sunburn, not at risk | 'I don't use anything, I don't use sunscreen and I don't use a hat, and I really don't get burnt' | |
| | | | Perceived severity | Aware, but do not think about it | One female coach had been diagnosed with melanoma and knew how serious it could be, but had not given the message to co-workers in the past | |
| | | | Barriers to sun protection | Obstacles to sport coaching, etc. | Hats and sunglasses make it hard to maintain eye contact and hats do not stay on in wind and active times | |
| | | | Benefits of sun protection | Good to start young, outdoors | Making it a routine would lead to less resistance | |
| | | | | Sunscreen the key | Felt that sunscreen alone | |

| Study details | Research parameters | Population and sample selection | Outcomes and methods of analysis Findings | | | Notes |
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| | | | | safety habit | was most important practice | |
| | | | Role models | Opportunity to be role models | Could be role models and visibly practice sun safety, but have not always been exemplars in the past | |
| | | | Perceived norms | Uneven use of sun protection | Often covering up treated like fashion, not safety and highly variable among staff | |
| | | | Issue or concept | Observation | Supporting comments of conclusion | |
| | | | Environmental supports | Fit with health/safety message | Encouraging drinking water on hot days is routine, so these moments could be used to stress sun safety too | |
| | | | Views on educational materials and strategies, sun safety policies | Lack of education for staff | 'We don't do enough of educating the parents because we ourselves aren't very educated' | |
| | | | | Willing to make policy/structural changes | Scheduling outdoor activity to avoid peak sun, providing convenient shaded areas and sunscreen…good options<br>Could send newsletters to parents, have sun-smart contests, conduct interactive/involving activities | |

| Study details | Research parameters | Population and sample selection | Outcomes and methods of analysis Findings | Notes |
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| **Authors:**<br>**Glanz et al**<br><br>**Year:**<br>**2008**<br>**Citation:**<br>**Measures of sun exposure and sun protection practices for behavioural and epidemiological research**<br>***Arch Dermatology***<br>**144 (2): 217-222**<br><br>**Quality score: (++, + or -)**<br>**+** | **What was/were the research questions:**<br>Aim:<br>To develop, in a collaborative project, core measures of sun exposure and sun protection habits.<br><br>**What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):**<br>Cognitive interviewing is used with people completing questionnaire, to help uncover how well they understand and interpret the questions, issues of memory retrieval, and how a particular person responds to a question. It can be used to pre-test questionnaires in order to minimise systematic error in self reported instruments, theory enhancing validity and reliability.<br><br>Analysis informed by Willis (2005) on cognitive interviewing.<br><br>**How were the data collected:**<br>- **What method (s):**<br>Cognitive interviewing (one-to-one)<br><br>- **By whom:**<br>NR<br>- **What setting(s):**<br>9 university sites in the USA.<br>- **When:**<br>NR | **What population were the sample recruited from:**<br>Adults (some of whom were parents), adolescents aged 11-17. Patients with skin cancer.<br><br>**How were they recruited:**<br>Five university sites used on-campus strategies such as fliers, visiting classes, approaching individuals.<br>One site recruited 11-17 year olds through acquaintances.<br>Three sites that targeted people with a history, or relative with a history, of skin cancer used people involved in a previous study or in person during dermatologists visit.<br><br>Response rate ranged from 6-66% for skin cancer patients and 70-100% for non-patient samples.<br><br>**How many participants were recruited:**<br>81<br>72 adults (of whom 19 also completed the parents of 1-10yr old questionnaire).<br>9 adolescents.<br>72% female 72% were white.<br><br>**Were there specific exclusion criteria:** | **Brief description of method and process of analysis:**<br>A protocol (modified for the different populations) was used as a standardised guide to help elicit feedback when answering questions. Participants were encouraged to "think aloud" as they answered questions and then were queried about each item afterwards. Responses were written down and audio-taped.<br>Preliminary data analysis was prepared at each site by reviewing the notes and tape-recording and a site report prepared.<br>A code book was developed to synthesise cross site issues related to the posed questions such as clarity, knowledge/memory, response categories, instructions and sensitive words.<br>2 team members coded the response summaries for each question and site. Discrepancies were discussed and finalised in consultation with PI. Coded comments were then compiled into a summary table by question and by site and problem areas. Recommended core questionnaire revisions were made through the PI reviewing these findings, and consensus sought with all participating investigators.<br><br>**Key themes (with illustrative quotes if available) relevant to this review:**<br><br>Main revisions resulted from the need for clarification or frames of reference.<br>Eg "how often do you wear a shirt with sleeves?" became "that covers your shoulders."<br><br>Items that asked adult about their children | **Limitations identified by author:**<br>Paucity of data in the psychometric properties of behavioural measures. Self report measures are limited by recall errors and difficulties in estimating frequencies.<br>The sample was mostly white and female and other populations may have other concerns.<br><br>**Limitations identified by review team**:<br>The individual site analyses are unclear – no transcript, and it's not clear how they wrote the "site report".<br>The overall analysis seems to have keep analyses separate by site – not clear why?<br><br>**Evidence gaps and/or recommendations for future research:**<br>Further quantitative testing of the questionnaire to assess internal validity, test-retest reliability and concurrent and criterion validity.<br>Core items may need to be adapted to other study goals, population and geographical locations.<br><br>**Source of funding:**<br>National Cancer Institute and Georgia Cancer coalition. |

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| | | **Were there specific inclusion criteria:** | needed clarifying where they had more than one child - changed to ask about their eldest child aged 1-10.<br><br>Asked about the colour of their untanned skin, respondents found “dark” and “black” confusing, so new version included:<br>“Very fair, fair, olive, light brown, dark brown and very dark”<br><br>Parents also expressed concern that they did not know what their child always did, as they were often separated from them.<br><br>The finalised questionnaire with core elements is reproduced in full, but no further details of changes made are given. | |

| Study details | Research parameters | Population and sample selection | Outcomes and methods of analysis Findings | Notes |
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| **Authors:** **Goodlad, N., Smith, K., Hastings, G. & Tones, K.**<br><br>**Year:** **1995**<br><br>**Citation:** **Skin Cancer Television Campaign: Formative Research Findings. Leeds: Leeds Metropolitan University**<br><br>**Quality score: (++, + or -)** **-** | **What was/were the research questions:**<br>What are the knowledge, attitudes and behaviour of carers, teachers, parents and guardians of young children towards sun exposure and sun protection?<br>What are the beliefs and attitudes of this group regarding mass media as source of information on health (generally) and skin cancer (in particular)?<br><br>**What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):**<br>None<br><br>**How were the data collected:**<br>- **What method (s):**<br>Focus groups (using detailed discussion guide)<br><br>- **By whom:**<br>Recruiters (adhering to the Market Research Society Code of Conduct)<br><br>- **What setting(s):**<br>Recruiters' homes<br><br>- **When:**<br>1995 | **What population were the sample recruited from:**<br>Not explicitly defined, but participants were residents of Yorkshire (Doncaster, Hull, Leeds and Sheffield)<br><br>**How were they recruited:**<br>Door-to-door (adhering to the Market Research Society Code of Conduct)<br><br>**How many participants were recruited:**<br>Not stated – 8 focus groups were conducted; it is *implied* that each focus group had 7-8 participants<br>Each focus groups was convened so as to reflect a certain group of participants (e.g. aged 21-30, middle class, not been abroad in past 5 years)<br><br>**Were there specific exclusion criteria:**<br>None stated<br><br>**Were there specific inclusion criteria:**<br>Female<br>Age 21-40<br>Mother of at least 2 children, at least one of whom aged <10<br>Middle (ABC1) or working class (C2DE) (as defined by occupation of main wage earner of household) | **Brief description of method and process of analysis:**<br>'Discussions were audio-taped with respondents' permission and transcripts were made. Anonymous quotes have been used to illustrate the findings. Unless indicated, these represent typical responses' (p3)<br><br>**Key themes (with illustrative quotes if available) relevant to this review:**<br><u>Perceived effects of sun exposure</u><br>Positive:<br>Psychological well-being<br>"You actually feel good with a tan. You look at yourself and you look well" (p4) (Female, 21-30, ABC1)<br>"Children with suntans look healthy, they look lovely" (p7) (Female, 31-40, C2DE)<br><br>Status<br>"I think if you go abroad as well, you want to come back with a suntan, so people know you've been abroad" (p5) (Female, 31-40, C2DE)<br><br>Relaxation<br>"I just like to go out and lie in the sun" (p7) (Female, 31-40, C2DE)<br><br>Negative:<br>Risk of children getting sunburnt<br>"It makes you think because you feel guilty, you're thinking, "Oh my God, you've only been out in it for an hour and your shoulders have gone red"' (p9) (Female, 21-30, C2DE)<br>"It's terrible when you see kids getting redder and redder and parents don't do anything about it. If mine got like that I think I'd have a nervous breakdown" (p9) (Female, 31-40, ABC1)<br><br><u>Determinants of sun exposure</u><br>Location<br>Participants stated that they were more likely to be prepared with suncream when holidaying in 'hot' locations abroad than in the UK | **Limitations identified by author:**<br>None<br><br>**Limitations identified by review team**:<br>Quota sample – unlikely to have recruited participants who were not particularly interested in and/or aware of sun exposure issues<br>Rudimentary details only provided regarding data collection<br>No details of analysis provided<br>No consideration of ethical issues<br>Although socio-economic status of participants is recorded with the illustrative quotes, no analysis conducted regarding how e.g. perceptions and understandings may differ in different socio-economic or age groups<br>Analysis is not developed beyond the descriptive<br><br>**Evidence gaps and/or recommendations for future research:**<br>None stated<br><br>**Source of funding:**<br>Not stated |

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| | | | "I think everyone's aware that when it's scorching sun, you've got the paddling pool out and all the kids have got hats on and suncream… but on an average English summer day they haven't" (p11, edit in original) (Female, 21-30, C2DE)<br>"I think you think more like of abroad, that you've got to take precautions, you don't think of taking precautions when you're going out for a day in the park" (p11) (Female, 21-30, C2DE)<br><br><u>Barriers to taking sun exposure precautions</u><br>Uncooperative children<br>"It's hard to make kids wear hats as they keep taking them off" (p19) (Female, 31-40, C2DE)<br>"I've told them to but the minute your back's turned the T-shirt's off and you know when they're little, you're putting it on and they're pulling it off" (p19) (Female, 31-40, C2DE)<br>Regarding suncream:<br>"I have to try and pin my two down. They don't stand still long enough" (p20) (Female, 31-40, C2DE)<br>"You just have to make sure they've got some on, they won't do it themselves, they just stand there, arguing while you put it on" (p20) (Female, 31-40, C2DE)<br><br>Perceived failure of precautionary measures<br>"I bought the bright coloured stuff [sunblock] that you use when you're skiing for your nose and lips. I literally plastered his face in it, he thought it was really funny but he still got burnt underneath" (p21) (Female, 31-40, ABC1)<br><br>Cost<br>"It's expensive when going abroad, what you spend on yourself, never mind the kids" (p21) (Female, 31-40, ABC1)<br>"I think one of the biggest incentives to make people put suncream on their children would be to make it cheaper" (p22) (Female, 21-30, C2DE)<br><br><u>Awareness and understanding of skin cancer</u><br>Participants who did not have direct experience (e.g. through a friend or relative) of skin cancer did not regard it as relevant: | |

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| | | | "Skin cancer is just one of those things you read about" (p24) (Female, 21-30, C2DE)<br><br>Short, severe periods of sun exposure were viewed as riskier:<br>"They say it's worse for those who cover up all year and then just strip off for a fortnight. It's the worst thing to do" (p25) (Female, 21-30, C2DE)<br>"It's just like the English – because we don't get much sun, we go mad, but the Australians, most of them have stopped getting tans because there's so much skin cancer" (p25) (Female, 31-40, C2DE)<br><br><u>Reactions to trial TV advertisements ('The sun has got his hat on' (SHG) and 'Teddy bears' picnic' (TBP))</u><br>SHG viewed as 'short, clear and humorous' (p30)<br>"It's basic, but it gets the message across, especially the last bit about children and sunburn" (p30) (Female, 21-30, ABC1)<br>A minority of participants regarded SHG as 'patronising or annoying' (p30)<br><br>TBP was viewed as having a more reasoning approach:<br>"There was more reasoning, you know if you don't pit sunscreen on, you don't put on a shirt, you'll get sunburn and it'll not be nice, so do this cause that's the way you can be safe. The other one was really saying, put these things on when you go out in the sun" (p32) (Female, 21-30, C2DE)<br><br>Some participants felt that by aiming to make the advertisements appealing to children, the health message was not being appropriately targeted:<br>"I think they're aiming at the wrong people, they should aim at the mums because it does fall back on the mums" (p35) (Female, 31-40, C2DE)<br>However, others felt that it was important to make the advertisements appealing to children:<br>"It's good because a lot of the time you're not actually with them, they're with their friends playing in the garden. They can say to each other, 'put your hat on'" (p36) (Female, 21- | |

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| | | | 30, C2DE) | |

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| **Authors:** **Lupton, D. and Gaffney, D.** **Year:** **1996** **Citation:** **Discourses and practices related to suntanning and solar protection among young Australians. Health Education Research 11 (2) 147-159**<br><br>**Quality score: (++, + or -)** **+** | **What was/were the research questions:** Study aimed to 'identify some of the discourses and practices around solar protection, skin cancer and tanning among Australian young people, with a particular focus on gender differences' (p147) **What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):** None explicitly stated, but discourse considered key, as the analysis aimed to throw light upon the 'patterned ways of understanding, representing and talking about phenomena that participants drew upon when articulating their responses to tanning, body image and solar protection' (p150)<br><br>**How were the data collected:**<br>- **What method (s):** Focus groups (n=12), approximately 45 minutes duration with 8-9 participants in each (some mixed-sex, some single-sex)<br><br>Semi-structured question schedule was utilised (details provided); in addition, visual materials (magazine images of individuals with tanned/non-tanned skin and the 'Me No Fry' television adverts<br><br>Focus groups were audio-taped and transcribed; field notes were completed at the end of each group by the facilitator | **What population were the sample recruited from:** Children at 6 New South Wales secondary schools **How were they recruited:** Not stated<br><br>**How many participants were recruited:** 98 (50 females, 48 males) (50 aged 11-13, 48 aged 14-16) 94% were from English-speaking backgrounds<br><br>**Were there specific exclusion criteria:** None stated<br><br>**Were there specific inclusion criteria:** None stated | **Brief description of method and process of analysis:** Transcripts were analysed for discourses, focusing upon 'the structure of the participants' explanations, the words, phrases, concepts and belief systems they used and the other texts they drew upon in their explanation (e.g. campaign material, other mass media)' (p150)<br><br>**Key themes (with illustrative quotes if available) relevant to this review:**<br><u>Tanning</u><br>Tanned skin perceived as more attractive than pale/white skin and also indicative of an outdoors lifestyle – a tanned person was perceived as being likely to be a "fun, beachy person" rather than a pale person who "spends a lot of time inside" (p150)<br><br>Tanned skin was considered to be the norm, with untanned or pale skin as abnormal and socially inappropriate:<br>"I hate being white, you feel really self-conscious" (female) (p151)<br>Other words used to describe untanned people: "unhealthy", "sterile", "death warmed up" (p151)<br>"If you look too white, it looks like you've got white paint and you have just painted yourself white. It looks funny" (p151)<br><br>Due to the ease with which a tan can be obtained in summer in Australia 'simply by walking around outdoors', remaining untanned is perceived to require particular effort and therefore a sign of 'artificiality':<br>"I think with a tan it is like adding more to your body" (male) (p151)<br>"I hate people who are too white – they look like a ghost or something" (female) (p151) | **Limitations identified by author:** None<br><br>**Limitations identified by review team**: Insufficient details provided regarding analytic process<br><br>**Evidence gaps and/or recommendations for future research:** Design and evaluation of campaigns that foster 'positive meanings' around pale skin rather than trying to challenge the positive conception of tanned skin<br><br>**Source of funding:** Health Promotion Unit, New South Wales Health Department |

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| | - **By whom:**<br>Not stated<br>- **What setting(s):**<br>Secondary schools in New South Wales, Australia (all were conducted during school hours)<br>- **When:**<br>1994 | | "White skin makes your figure look terrible" (female) (p151)<br><br>Tanned skin was not automatically considered to be preferable – it needed to 'suit' the person:<br>"If you see a guy who's tall, blond hair, blue eyes – a tan looks good on him, some people it doesn't" (female) (p151)<br>Some considered pale skin to be a sign of strength, e.g. Madonna's pale skin was perceived as demonstrating that "she has her own opinions" (p151)<br><br>Tanned skin was associated with Australian nationality, with white pale skin being 'considered a sign of foreignness, particularly British nationality':<br>"I'm brown, [my father and brother] are the same, but my mum, she's a Pommy" (female, edit in original) (p151)<br><br>Male students 'frequently' stated that they were not concerned about the effects of the sun on their skin (e.g. causing wrinkles), while female students expressed more concern about the possibility of skin damage<br><br>Male students emphasised that they did not 'try' to get a tan (as they perceived girls to be doing when lying 'passively' in the sun) – 'for a boy to try to get a tan was represented as unmasculine, tending towards female vanity' (p152)<br><br><u>Solar protection and sunburn</u><br>All participants were able to list ways of protection from the sun, e.g. wearing clothing, using sunscreen, wearing a hat/sunglasses<br><br>All participants were aware of side-effects of too much sun exposure, e.g. dehydration, | |

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| | | | headache, moles, sunburn, skin cancer, dry/wrinkly/leathery skin<br><br>Many made negative statements about people who became sunburnt; “they’re not responsible”, “they don’t care about their skin, they just want to get a tan” (p153)<br><br>Although participants did not want to get sunburnt, the main perception was that burnt skin (unless peeling) ‘became brown and provided a deep tan’, e.g.:<br>“[After becoming sunburnt] I used to feel, oh cool, I am going to get brown the next day, I can’t wait” (female) (p153)<br><br>Not following parents’ advice regarding skin protection (as participants were obliged to do when younger) was viewed as a way of making one’s own decisions. The perceived lack of rationale in advice, as well as changes in how authority is reacted to, was also identified:<br>“Most people today, before when our parents and that, were kids, people would tell you not to do things, and you would just take their word for it. But now people have changed. Unless you have a good reason for not doing it, you won’t listen to what people say, like they don’t explain to you why you should wear a hat and that” (male) (p153)<br><br>Views on the wearing of sunglasses and shirts (whilst at the beach or swimming pool) varied according to whether these items were considered fashionable or not, e.g.:<br>Boys frequently wore branded baseball caps, but in order to be fashionable rather than to protect from the sun – “You wear a hat even if there’s no sun” (male) (p154)<br><br>Girls’ views on hats varied; some would not | |

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| | | | consider them as "they wreck your hair", others would wear hats "if they look good with some outfits" (p154)<br><br>One school had adopted a fashionable baseball cap as part of its uniform – students noted that 'as soon as the cap became part of the school uniform it lost its positive associations' (p154)<br><br>Participants with fairer skin were typically more vigilant about applying sunblock, but 'students commonly said that wearing sunblock prevented them from getting a tan, so they often used sunblock with lower SPF factors or deliberately spent some time in the sun before applying sunblock so as to acquire a tan' (p154)<br><br><u>Responses to the 'Me No Fry' campaign</u><br>Nearly all participants said they had seen or heard the 'Me No Fry' advertisements – 'covering up' was the primary message that they understood from the campaign<br><br>Some older boys were negative about the 'eggs' advertisement – although they stated that they understood the message, "you don't pay attention because you have seen it so many times, you need new stuff all the time" (p155)<br><br>The 'stars' advertisement (featuring famous actors) was viewed negatively by some participants:<br>"That's all fake anyway, they'd all be baking themselves on the beach too, I bet" (female)<br>"If you were down the beach you wouldn't expect to see them with pink zinc stripes across their faces" (p155)<br>Some boys viewed the 'stars' advertisement positively because of who featured in it, namely | |

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| | | | the “good looking women – makes you look at it” (male) (p155)<br><br>Younger participants reacted more positively to the ‘stars’ advertisement:<br>“I reckon it’s good because it doesn’t show them, like, burning, it shows them, like, having fun, covering up” (female) (p155) | |

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| **Authors:**<br>**Murray, C.D. & Turner, E.**<br><br>**Year:**<br>**2004**<br><br>**Citation:**<br>**Health, risk and sunbed use: A qualitative study. Health, Risk & Society 6 (1) 67-80**<br><br>**Quality score: (++, + or -)**<br>**+** | **What was/were the research questions:**<br>Why do people use tanning facilities?<br>What do people feel the potential health benefits of artificial tanning are?<br><br>**What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):**<br>Interpretive Phenomenological Analysis<br><br>**How were the data collected:**<br>- **What method (s):**<br>Semi-structured interviews, approximately 1 hour duration<br><br>- **By whom:**<br>Not stated<br><br>- **What setting(s):**<br>Office at the researchers' institution (participant's choice) (n=3)<br>Office at the participant's place of work (n=5)<br>Participant's home (n=10)<br><br>- **When:**<br>Not stated | **What population were the sample recruited from:**<br>Tanning salons (n=4) in Merseyside, UK<br><br>**How were they recruited:**<br>Study information sheets were left at the salons; participants contacted the researchers if they wished to take part<br><br>**How many participants were recruited:**<br>18 (male n=9, female n=9), age range 18-32 (all reported using a sunbed at least once a month; duration of use ranged from 3 months to 8 years, average 3 years)<br><br>**Were there specific exclusion criteria:**<br>None stated<br><br>**Were there specific inclusion criteria:**<br>Sunbed use | **Brief description of method and process of analysis:**<br>'Transcripts were read in order to identify themes from a psychological perspective… [then] an idiographic approach in which the transcript of one interview was looked at in detail, with an attempt to be as exhaustive as practical, before other transcripts were examined' – then, initial themes were identified and collated in order to allow for connections to be looked for and 'superordinate concepts' developed. This final list 'presented, in the researcher's opinion, the most parsimonious analysis of these transcripts' (p71) and is used to present the analysis below.<br><br>**Key themes (with illustrative quotes if available) relevant to this review:**<br><u>Gaining some colour: Reasons for starting to use a sunbed</u><br>4 main reasons were given for starting:<br>i) 'Gaining some colour' before a holiday in order to "give my skin a bit of protection form the sun" (female)<br>ii) To fit in with holiday companions: "I didn't want to turn up looking like a milk bottle, so I started using the sunbeds" (female)<br>iii) To feel better about one's appearance: "It gave me a nice healthy glow and I didn't look as pasty; it made me look healthy" (female)<br>iv) To 'clear up' acne: "[I began using a sunbed] because I had spots… it did definitely help them" (male) (edit in original) (all p71)<br><br><u>Feeling better with a tan</u><br>Participants reported feeling better about their appearance and increased self-esteem when they were tanned:<br>"It makes me feel better in myself, and also I find the sessions really relaxing sometimes" | **Limitations identified by author:**<br>None stated<br><br>**Limitations identified by review team**:<br>Unclear whether or not participants' names have been anonymised<br><br>Despite the extensive description of the analytic process, the analysis itself predominantly draws on individual examples rather than developing the data into a conceptual whole<br><br>Convenience sample of sunbed users – no attempt made to investigate whether or not the participants were systematically different or not from other sunbed users<br><br>Over a quarter of the quotes are drawn from an interview with a single respondent – no rationale given for this focus<br><br>Analysis focuses upon the female participants' responses (18 quotations given from female respondents vs. 7 from male) - no rationale given for this focus<br><br>**Evidence gaps and/or recommendations for future research:** |

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| | | | (female) (p72)<br><br>The positive attention that a tan attracts was also mentioned:<br>"You always get a good response from a tan, whereas you always get a bad response from being pale, you get told 'ooh, you look so white'" (male) (p73)<br><br>A tan was also reported to increase self-confidence:<br>"I feel that I have a lot of bodily imperfections and by having a tan that it makes them seem less obvious… I also think that it makes me more outgoing somehow… that may sound stupid but it does have that effect on me and my personality" (female) (my edit) (p73)<br><br><u>Putting it to the back of your mind: A tan as healthy</u><br>'… the concept of tan as healthy, or helping someone to appear healthy, emerged consistently in interviews' (p73):<br><br>"… having a tan isn't necessarily healthy although it gives the appearance that it is" (female)<br>"I'd rather go on [a sunbed] than look ill" (male) (p74)<br><br>All participants were aware of the risks of using a sunbed, but this was not prominent in their rationale for continuing sunbed use:<br>"Well I mean, the obvious risk is skin cancer but I tend not to think about it, you just seem to put it to the back of your mind and hope that you won't get it" (female) (p74)<br>"… if I've done any damage [through using sunbeds] I've probably done it by now so I may as well carry on… [Sometimes I worry about the risks and stop using sunbeds] but then | Evaluation of the effectiveness of health campaigns that are based upon people's motivations for sunbed use, e.g. as the 'healthy' appearance of skin is valued, an emphasis upon the risk of premature aging could be emphasised<br><br>**Source of funding:**<br>Not stated |

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| | | | when my tan fades and I start to get pale again I find myself thinking 'oh what the hell, I'm only young once so I might as well feel good about the way I look whilst I can'" (female) (p74) (my edit)<br><br>For some participants, the aging effects on skin of sunbed use were of greater concern than the risk of skin cancer<br><br>Some participants had an 'optimistic bias' regarding the risks they were exposing themselves to:<br>"I've read of people getting skin cancer, in magazines, and blaming it on their use of sunbeds, but they seem to use the sunbeds a lot more than I do" (female) (p75)<br><br><u>I wish I'd never started: Sunbed use as an addiction</u><br>8/18 of the interviewees discussed their sunbed use in terms of addiction:<br>"If I haven't been on a sunbed for a while, like when I'm trying to save money, then I just don't feel as well, as healthy. I get colds and stuff. I start to feel down and get very tense. I just don't have the willpower to stop for long" (female) (p76)<br><br><u>That can't be good for you: Risks of sunbed use</u><br>Participants expressed a range of views about whether sunbed use or exposure of the skin to the sun was more risky | |

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| **Authors:**<br>**Paul, C., Tzelepis, F. Girgis, A., & Parfitt, N.**<br><br>**Year:**<br>**2003**<br><br>**Citation:**<br>**The Slip Slap Slop years: Have they had a lasting impact on today's adolescents? Health Promotion Journal of Australia 14 219-221**<br><br>**Quality score: (++, + or -)**<br>**-** | **What was/were the research questions:**<br>What are the perceptions of 12-17 years olds regarding sun protection media messages?<br><br>**What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):**<br>None stated<br><br>**How were the data collected:**<br>- **What method (s):**<br>Gender-specific focus groups (n=17), duration 45-60 minutes<br>As goal of research was to investigate recall and perceptions of sun protection media messages, the advertising that participants could recall was asked about on just one occasion, with no further prompts<br><br>- **By whom:**<br>Market research company<br><br>- **What setting(s):**<br>School classrooms (for children in years 7-10)<br>Market research company's 'focus group facilities' (for children in years 11-12)<br><br>- **When:**<br>2001 | **What population were the sample recruited from:**<br>Public High Schools in the Hunter Region, New South Wales, Australia<br><br>**How were they recruited:**<br>Permission to conduct research obtained from school principals; teachers distributed information sheets and consent forms (consent from both student and parent required)<br><br>**How many participants were recruited:**<br>95 ('effort [made] to achieve representation from a range of socio-economic backgrounds' (p220))<br><br>**Were there specific exclusion criteria:**<br>None stated<br><br>**Were there specific inclusion criteria:**<br>None stated | **Brief description of method and process of analysis:**<br>'Thematic analysis was performed by the focus group facilitator, then audited by one of the research authors. Auditing involved comparing transcripts to extracted themes for accuracy' (p220)<br><br>**Key themes (with illustrative quotes if available) relevant to this review:**<br>Most groups (14/17) could recall the 'Slip Slap Slop' campaign<br>11/17 groups recalled the 'Seymour the Snowman' advertisement<br>8/17 groups recalled the 'Me No Fry' campaign<br>There was no gender or age variation in this recall<br><br>Participants perceived the media messages as being instructional and overly directive<br>Campaigns were perceived as a reminder or prompt to use sun protection; soundtracks were considered particularly memorable:<br>"It gets stuck in your head"<br>"The song gets in your head. It's really corny" (Year 10 males) (p220)<br><br>Pre-teen age groups perceived the campaigns as relevant and appropriate, but teenagers described the campaigns as "simplistic", "boring" and not believable<br>'Participants noted that the original impact of campaigns was being lost over time due to their own changing lifestyles and a lack of messages appropriate for their own age group' (p220)<br><br>Sun protection campaigns were perceived as being much less prominent than other health campaigns:<br>"The main reason people are aware of smoking | **Limitations identified by author:**<br>None<br><br>**Limitations identified by review team**:<br>Very limited details provided regarding data collection and analytic process<br><br>Structure of focus group discussions unclear<br><br>No rationale given for convenience sample<br><br>Negligible development of coded themes into a conceptual whole<br><br>**Evidence gaps and/or recommendations for future research:**<br>None<br><br>**Source of funding:**<br>None stated |

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| | | | is because of the ads on TV"<br>"Nobody cares because nobody knows about [sun protection]" (year 8 female) (p220)<br><br>'The campaigns were credited with associating positive feelings with the use of sun protection'<br>"They make me feel when I'm actually putting the stuff on that I'm doing the right thing" (year 8 male) (p220)<br>However, the 'motivational factor' for this age group was perceived to be limited by the use of cartoons in the campaigns, 'a lack of overt reasons for sun protection practices and the lack of the 'cool' factor' (p220)<br><br>'Some participants noted an appreciation of and desire for fun and humour in campaigns, while others expressed a perceived need for graphic images and strong messages in order to have an impact on their behaviour. A strong preference was expressed (by males more often than females) for the use of graphic and realistic images with 'shock' value':<br>"With the snowman they're just like little cartoons and I don't really pay much attention to them. I just look at them and laugh but if you see like real people who have had all the bad stuff on their faces, really bad, you take more notice of that…" (year 8 male) (my edit) (p221) | |

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| **Authors:**<br>**Reeder, A., McAllister, S., & Bulliard, J-L.**<br><br>**Year:**<br>**2000**<br><br>**Citation:**<br>**Child sun protection in New Zealand: Parental views and societal responsibilities. Health Promotion Journal of Australia 10 (3) 217-223**<br><br>**Quality score: (++, + or -)**<br>**-** | **What was/were the research questions:**<br>'To gain insight into parental opinions and practices related to the protection of young children from excessive sun exposure'<br><br>**What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):**<br>None stated<br><br>**How were the data collected:**<br>- **What method (s):**<br>Focus groups (n=2)<br><br>- **By whom:**<br>Not stated<br><br>- **What setting(s):**<br>Not stated<br><br>- **When:**<br>1999 | **What population were the sample recruited from:**<br>Users of childcare centres and kindergartens in Dunedin, New Zealand<br><br>**How were they recruited:**<br>24 childcare centres and 22 kindergartens were identified from the local telephone directory and asked to display a recruitment notice and advise potential participants to leave their name and phone number. Potential participants were phoned to arrange a suitable meeting time and provided with an information sheet and consent form<br><br>**How many participants were recruited:**<br>12 (female, n=11; male, n=1), aged 25-40 years<br><br>**Were there specific exclusion criteria:**<br>None stated<br><br>**Were there specific inclusion criteria:**<br>None stated | **Brief description of method and process of analysis:**<br>Focus group sessions were audio-taped and 'separately reviewed by two researchers'. A 'draft summary was sent to participants [who were] asked to return their comments in a reply-paid envelope'<br><br>**Key themes (with illustrative quotes if available) relevant to this review:**<br><u>Attitudes and knowledge of risk</u><br>Whilst participants agreed that it was unacceptable for a child to get sunburnt, they still viewed a tan as a sign of health:<br>"If you're fit, healthy and white it's just not quite the same" (p219)<br><br>People with a naturally dark complexion and a reduced tendency to burn found it more difficult to pay attention to sun protection messages:<br>"It's hard to get your head around it if you're not personally at risk" (p219)<br><br><u>Media messages</u><br>Although generally understood, there existed some confusion over reports of 'burn time' on TV and local radio, e.g. regarding the time of day and skin types that it referred to<br><br>Some participants did not trust media reports:<br>"They can't get the weather right so how could they get the burn time right?" (p219)<br><br>Some viewed 'constant preparedness' as important in preventing sunburn (due to the changeable nature of the weather), whilst others used reports of burn time as a reminder to be careful, but one which "you need to be reminded about while you're actually out" (p219) | **Limitations identified by author:**<br>None<br><br>**Limitations identified by review team**:<br>Small sample size not compensated for by depth of analysis<br><br>No rationale provided for convenience sample<br><br>**Evidence gaps and/or recommendations for future research:**<br>None<br><br>**Source of funding:**<br>Partly funded by a grant from the Bequest Fund (administered by the Deans' Advisory Committee, University of Otago). Research group also receives funding from Cancer Society of New Zealand, Inc., Health Sponsorship Council and University of Otago |

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| | | | Ultra Violet Index (UVI)<br>Participants were not clear about the meaning of UVI – 'a burn time expressed in minutes was thought to give a clearer indication of risk than the UVI measures of 'extreme' or 'moderate' risk' (p219)<br><br>Sunscreens<br>Participants believed there to be a lack of authoritative information on sunscreen use:<br>"There's lots of information out there, but what do you believe?"<br>"What's advertising and what's real?" (p220)<br><br>Concerns were expressed regarding possible negative effects of long-term sunscreen use<br><br>Applying (and re-applying) sunscreen to children was viewed as time consuming and sometimes problematic, e.g. getting children to stand still, pain if the sunscreen gets into a child's eyes, and 'unpleasant' and 'awkward' greasy nature of sunscreen<br><br>Sunscreen application was viewed as dependent upon its availability, storage in convenient places and availability in a form that was 'economical' and easy to apply from the containers<br><br>Some participants expressed the view that 'the spontaneity of some activities can be hindered by the need for sun protection' (p220)<br><br>Cost of sunscreen was a disincentive for use, and in particular for re-application<br><br>Hats and other clothing<br>Participants thought that making hats part of school uniforms would reduce both the need for parents to remind children to wear a hat to | |

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| | | | school and of peer pressure on children who wore ‘fancy caps’ (p220)<br><br>An ‘ideal hat’ was described as; made from the same material as sun tops, easy to wear and keep on the head, possible to wear in water, and quick-drying (p220)<br><br>Participants noted that they themselves did not like wearing a hat as it was a ‘hassle’, but they noted that children would notice if adults were not wearing a hat (p220)<br><br>Rash suits and wet suits were favoured for children (but not toddlers) as they were quick-drying and removed the need to apply sunscreen | |

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| **Authors: Shoveller, J.A., Lovato, C.Y., Young, R.A., & Moffat, B.**<br><br>**Year: 2003**<br><br>**Citation: Exploring the development of sun-tanning behaviour: A Grounded Theory study of adolescents' decision-making experiences with becoming a sun tanner. International Journal of Behavioral Medicine 10 (4) 299-314**<br><br>**Quality score: (++, + or -)**<br>**++** | **What was/were the research questions:**<br>How do adolescents make a decision about getting a suntan?<br><br>**What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):**<br>Grounded Theory<br><br>**How were the data collected:**<br>- **What method (s):**<br>2 stage semi-structured interviews conducted (separately) with adolescents and a parent, duration c.2 hours:<br>Stage 1 – video-taped exploratory interview, drawing on the participant's pre-prepared 'summertime memories chronicle'<br>Stage 2 – audio-taped reflective interview (to reflect on cognitions and emotions) in which the recording of Stage 1 of the interview was reviewed with a different researcher<br><br>Interviews were structured to explore factors relating to decision-making about sun tanning, the role of peers and the fashion industry, family health patterns, perceived parental control, and the strategies implemented to address health issues (this structure evolved 'to reflect the emergent theoretical needs of the model building and hypothesis generating exercise inherent in a grounded theory study' (p303) as analysis of interviews progressed) | **What population were the sample recruited from:**<br>3 communities (Vernon, Kelowna, Penticton) in Southern Interior of British Columbia, Canada (a region widely promoted as a 'sunbather's paradise')<br><br>**How were they recruited:**<br>5 waves of purposeful sampling using referrals from key community contacts, local newspaper and radio advertisements, notices in local community centres and outdoor recreation events aimed at adolescents<br><br>**How many participants were recruited:**<br>40 (adolescents n=20 (age range 12-16), one parent of each of the adolescents (age range 34-50) n=20)<br><br>Annual household income of participants:<br>>CDN$70000 – 40%<br>CDN$30000-69000 – 50%<br><CDN$30000 – 10%<br><br>**Were there specific exclusion criteria:**<br>None stated<br><br>**Were there specific inclusion criteria:**<br>Participants in each subsequent wave were | **Brief description of method and process of analysis:**<br>Interviews were transcribed and analysed using the constant comparative method. Initially, a code was assigned to each new idea expressed in the transcript, then 'as new codes were identified, deductive processes guided the description of how these codes were interrelated… [key concepts were developed] and compared with raw data until no new ideas emerged and all the transcripts had been coded. This process involved circulating the coded transcripts to all 4 coders (the study authors), who met regularly to discuss emergent codes and to 'contextualise individual pieces of data into a more abstract and conceptual perspective'. The 4 coders also 'discussed how their own values and assumptions related to sun tanning may have affected their interpretations of the data' (p303)<br><br>**Key themes (with illustrative quotes if available) relevant to this review:**<br>The following analytic structure was developed based upon the initial 5 interviews (diagrammatically expressed in Figure 1, extracted below)<br>1) Becoming motivated – 'corresponded to the emergence of feelings of physical attraction toward others as well as a growing desire to be physically attractive for others'<br>2) Experimenting – 'began when adolescents became more influenced by their peers… than by their parents' influences regarding sun protection'<br>3) Establishing self – becoming an intentional or incidental tanner was 'individually determined' (i.e. no clear pattern) (p306)<br>(an 'intentional tanner' deliberately exposes their skin to the sun for the purposes of tanning, whilst an 'incidental tanner' saw skin tanning as a desirable side-effect of taking part in outdoor | **Limitations identified by author:**<br>Male adolescents had greater difficulty in articulating their experiences regarding sun tanning than females (analysis therefore focused upon data obtained from females)<br><br>**Limitations identified by review team**:<br>None<br><br>**Evidence gaps and/or recommendations for future research:**<br>As findings were 'not intended to be generalised' additional research is required to determine transferability of findings<br><br>**Source of funding:**<br>National Cancer Institute of Canada |

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| | - **By whom:**<br>Two members of the research team<br><br>- **What setting(s):**<br>Not stated<br><br>- **When:**<br>2000-2001 | recruited 'on the basis that they had the potential to further inform the emerging theory' (p302) | activities)<br><br><u>Becoming motivated</u><br>Adolescents' motivations were influenced by observing others (e.g. older siblings, friends, older teens at the beach) and also by 'receiving compliments or derision regarding their appearance':<br>"They [peers] compliment you on how dark your skin is and say 'Oh yeah, I like that colour'" (female, age 14) (p307)<br><br>Some adolescents shared erroneous beliefs about suntanning, e.g. that a tan protected the skin from burning, that sunburn at the beginning of the summer was a necessary 'jump start' to prepare the skin for exposure to the sun, and that incidental tanning was not as dangerous as intentional tanning<br><br>The environment was identified as fostering 'getting a tan'; the Southern Interior is a resort area that promotes (through the media) 'fun in the sun', especially on beaches. The local built environment (many backyard and public swimming pools, outdoor recreation venues, and tanning salons) also provided the context in which tanning was 'inevitable' (p307)<br><br>'As adolescents began to assert their independence [from their parents' sun protection strategies], their experimentation with intentional tanning began:<br>"[When younger] I wasn't like really trying to get a tan… I'd wear my bathing suit, I'd go swimming and just play volleyball or something like that, which I still do, but now I spend more time actually laying there and like actually wanting to really get one [a tan]" (female, age 15) (p307)<br><br><u>Experimenting</u> | |

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| | | | 'Experimenting' defined as: 'judiciously using sunscreen [and/or] learning how to avoid tanlines… to better "fit the picture" [i.e. to fit with the expectations of peers and media images]' (my edit) (p308)<br><br>The transition to experimenting can be explained by two processes:<br>i) 'Fitting the picture' – recognising and attempting to achieve a particular image as a desirable goal (being tanned was strongly associated with being active and 'healthy'):<br>"I think they [the media] send out that… you should go sunbathing because you look a whole lot better and in all the ads in magazines you see bronze, athletic people and they look so much better… I don't know… I think they are encouraging us to go sun tanning" (female, age 12) (edit in original) (p308)<br><br>Having an appropriate tan was part of a wider aspect of appearance; clothes and hair also needed to 'fit the picture', but the desire to tan was motivated by:<br>a) 'the need to be noticed by others, and in so doing, achieve positive recognition and gain popularity'<br>b) 'the desire to blend in with others, thereby avoiding negative recognition and being shunned by peers' (p308)<br><br>Having a tan that was neither too dark nor too light was considered important by adolescents:<br>'Sometimes it can look really dumb because… if you see a comparison that's super dark in the summer, but in the winter they just kind of go normal again… sometimes it looks kind of weird, like in the summer they are so dark and in the winter they are so light' (female, age 12) (edit in original) (p309) | |

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| | | | Adolescents compared suntans with one another as a means of learning what constituted an appropriate tan<br><br>ii) 'Shifting sphere of control' – 'the process by which adolescents began to engage more frequently in decision making beyond the boundaries of the family' (p309)<br>Some adolescents reported acquiescing to their parents decisions about sun protection, whilst others 'manoeuvred to negotiate new boundaries and ultimately take primary responsibility for their own decisions':<br>"I'll put on sunscreen, so she [mother] can see it and I have it all on before I'm going to the beach. And then I just wash it off… like I don't *try* to wash it off, but I go swimming and the it eventually comes off" (female, age 15) (p309)<br><br>Some adolescents perceived their parents as 'ruining the fun and spontaneity of adolescence' by their attempts to enforce sun protection behaviour (e.g. parents were "always nagging" or "always on my case") (p309)<br><br><u>Establishing Self</u><br>Adolescents who did identify as a 'sun tanner' associated certain 'traits and behaviour patterns with particular identities and used labels to categorise different types of people as desirable or otherwise' (p310):<br>"Like, if you don't have a tan, most people think, 'Well gee, this person must not go outside because if they went outside more often, they'd have a tan'. So, they [think you] stay inside, just watch TV or do nothing… [they] think you're a couch potato" (male, age 15) (p310)<br><br>Adolescents described the 'primary goal of avoiding sunburn being to enhance the likelihood of getting the right tan, rather than to reduce the | |

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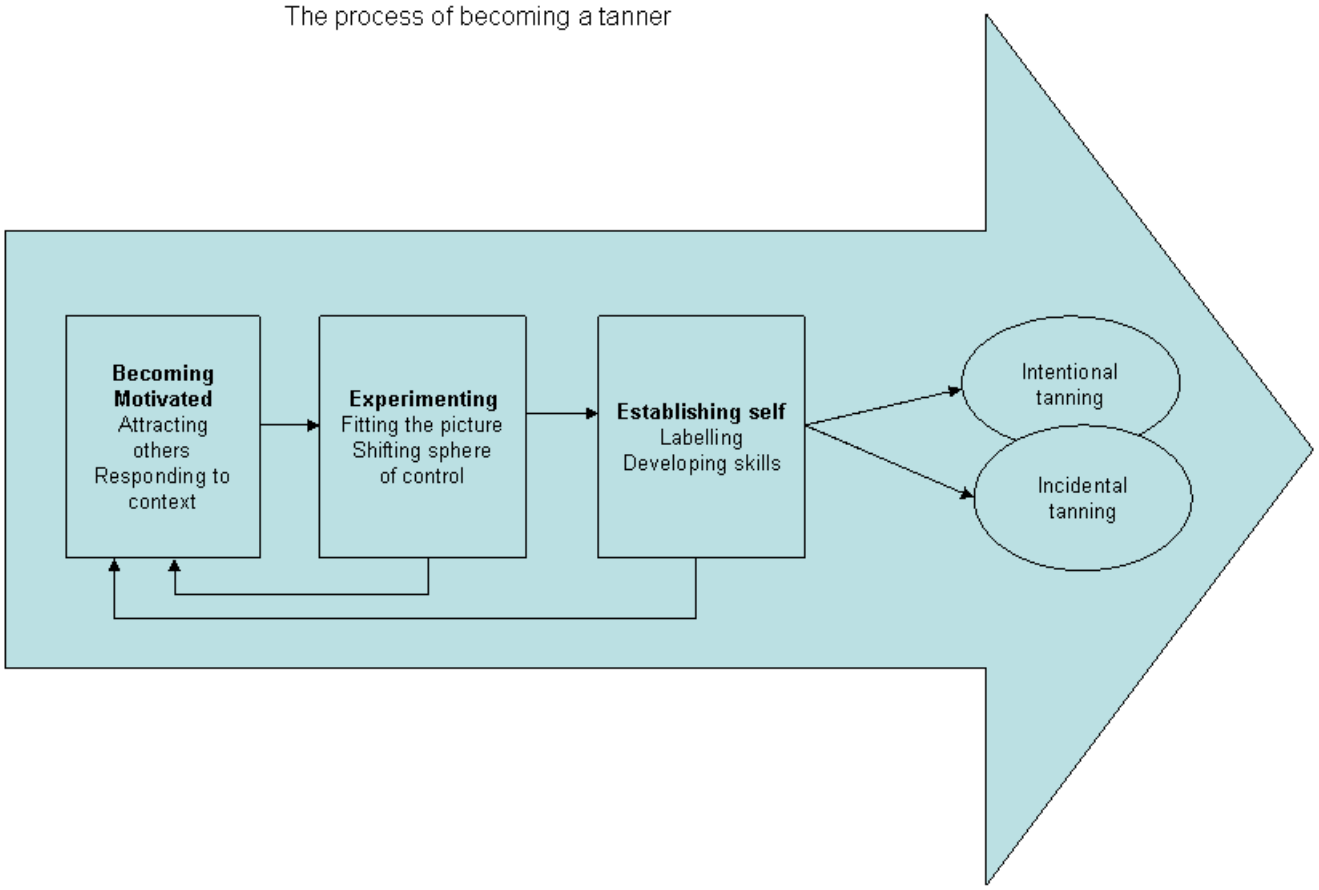
| | | | risk of skin cancer' (p310) – for this reason, sunscreen was preferred (over protective clothing and broad-rimmed hats) as it allowed them to continue to 'fit the picture' and get a tan | |


The process of becoming a tanner
Becoming Motivated
Attracting others
Responding to context
Experimenting
Fitting the picture
Shifting sphere of control
Establishing self
Labelling
Developing skills
Intentional tanning
Incidental tanning

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| **Authors:**<br>**Tones, K. & Smith, K.**<br><br>**Year:**<br>**1996**<br><br>**Citation:**<br>**Skin Cancer Prevention: Protecting Children from the Sun. An Evaluation of the Yorkshire and Trent Television Campaign May 1995. Leeds: Leeds Metropolitan University**<br><br>**Quality score: (++, + or -)**<br>**-** | **What was/were the research questions:**<br>Not explicitly stated, but broadly around 'assessing responses to' (p27) the skin cancer television advertisements shown in Yorkshire (May 1995). Beliefs about sun exposure and knowledge about sunblock was also to be assessed<br><br>**What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):**<br>Social Learning Theory (where behavioural intention is a result of self efficacy (belief in ability to change own behaviour) and response efficacy (belief that the behaviour makes a tangible difference))<br><br>**How were the data collected:**<br>- **What method (s):**<br>Postal survey<br><br>- **By whom:**<br>Administered through local health phone enquiry line<br><br>- **What setting(s):**<br>Not applicable<br><br>- **When:**<br>1995 | **What population were the sample recruited from:**<br>People in Yorkshire who phoned the 'Health Box' enquiry line (number promoted through the Yorkshire TV advertisements)<br><br>**How were they recruited:**<br>All enquirers who phoned the 'Health Box' were sent the survey; some (e.g. school teachers) were sent multiple copies in order to distribute more widely to parents<br><br>**How many participants were recruited:**<br>197 (92% female)<br><br>**Were there specific exclusion criteria:**<br>None stated<br><br>**Were there specific inclusion criteria:**<br>None stated | **Brief description of method and process of analysis:**<br>None given<br><br>**Key themes (with illustrative quotes if available) relevant to this review:**<br>(All p29-30)<br><u>Reactions to the TV advertisement</u><br>Cover up/protection<br>"Cover up and don't take risks in the sun because it is very dangerous and can cause problems in the present and the future"<br>"It really only tells me what I know already. I have always made sure children are protected. It could I suppose help and inform others as to the dangers of the sun and lead to cover up"<br><br><u>'Slip-Slap-Slop'</u><br>"Always cover the skin with protective creams not only when it gets very hot"<br>"Wear a hat, cover up in the sun and put on suncream"<br>"It is a very good advert because it catches the attention of young children as it uses a familiar song for them. For me it highlights the importance of covering up with a hat, t-shirt and suncream"<br><br><u>Dangers of the sun</u><br>"Educational – sun can do harm both in short term and long term"<br>"It clearly got the message over that sun can be dangerous"<br>"Be aware of the direct harmful effects of the UV light due to prolonged exposure to intense sun on unprotected skin"<br><br><u>Cover up/Sunburn and skin cancer</u><br>"Cover up in the sun or skin may burn and could lead to skin cancer"<br>Take care of your children's skin in the sun, to prevent burning now and possible skin problems in later life"<br><br><u>Miscellaneous</u> | **Limitations identified by author:**<br>As respondents were recruited following their call to a health information phone line, sample intrinsically drew upon people who were interested in health issues<br><br>**Limitations identified by review team**:<br>Unclear report write-up, e.g. difficult to find out number of participants, how they were recruited, and how the recruitment of these participants is related to the larger 'audience survey' – the lack of clarity in the reporting does not foster confidence in the validity of the research methods used (about which there are minimal details)<br><br>Significant doubts regarding research methods used, e.g. surveys were returned by people (n=53) who had not seen the TV advertisements – although these were excluded from the analysis, it is unclear how it is known that others who had completed surveys had seen the advertisements or were not simply completing them for entry into the prize draw (significant potential for multiple submissions by an individual, as survey participants were offered a |

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| | | | "Have seen the commercial but cannot recollect exact content"<br>"Made you sit up and watch – quite a catchy tune"<br>"I think it's great and right to the point"<br>"Commercial is very vague as to information it is getting across. Could be done better. Not enough information about protection from the sun"<br><br><u>Need for more information</u><br>The following areas were identified by respondents:<br>Suncream<br>"Why is the sun so much more dangerous these days and why is suncream so expensive for a good quality product?"<br><br>Other methods of protection from the sun<br>"Do mixed fabrics (man made/natural) protect heads from sunstroke?"<br><br>Skin cancer, sunburn and sunstroke<br>"Every year I get more and more moles all over. Is this a sign of skin cancer? I use the sunbed 2 months a year and sunbathe with protection a few hours a day when hot"<br><br>Relationship between protection and level of tan<br>"Is it OK to use sun oil after you have been abroad about a week and you have a tan? When you have a good tan, is it OK not to use any protection, just put on after-sun?"<br><br>Sunbeds<br>"Can health club sunbeds contribute to risk of skin cancer – by how much?" | valuable first prize (a free Center Parcs holiday))<br><br>Rudimentary analytic themes<br>No details provided regarding analytic process<br>Analysis does not contain any details of the demographic characteristics of participants<br><br>**Evidence gaps and/or recommendations for future research:**<br>None stated<br><br>**Source of funding:**<br>None stated |

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| **Authors:**<br>**Wright, L., & Bramwell,, R.**<br><br>**Year:**<br>**2001**<br><br>**Citation:**<br>**A qualitative study of older people's perceptions of skin cancer. Health Education Journal 60 (3) 256-264**<br><br>**Quality score: (++, + or -)**<br>**-** | **What was/were the research questions:**<br>What are the health beliefs of older people in relation to skin cancer?<br><br>**What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):**<br>Health Belief Model:<br>- perceived susceptibility to skin cancer<br>- perceived severity of the disease<br>- perceived benefits of and barriers to skin self-examination<br><br>**How were the data collected:**<br>- **What method (s):**<br>Semi-structured interviews<br><br>- **By whom:**<br>Study author<br><br>- **What setting(s):**<br>Social centre for people aged >55<br><br>- **When:**<br>Not stated | **What population were the sample recruited from:**<br>Attendees at a social centre for the over-55s (UK)<br><br>**How were they recruited:**<br>Individuals were approached whilst socialising or waiting to start and activity, the study was described and participation invited<br><br>**How many participants were recruited:**<br>20 (male n=10, female n=10), age range 58-87<br><br>**Were there specific exclusion criteria:**<br>None stated<br><br>**Were there specific inclusion criteria:**<br>Age >55 | **Brief description of method and process of analysis:**<br>Quotations were tabulated according to pre-defined categories from the Health Belief Model (e.g. perceived susceptibility to skin cancer) and 'recurring themes of information across categories were identified as themes' (p259)<br><br>**Key themes (with illustrative quotes if available) relevant to this review:**<br><u>What causes skin cancer?</u><br>'Almost all' participants identified exposure to the sun/ultraviolet light as the main cause of skin cancer, but:<br>a) there were variations in the precision of this understanding, e.g. "more to do with sunbeds than ultraviolet light", "caused by ultraviolet rays, not the sun" (p259)<br>b) some expressed erroneous beliefs, e.g. "contagious (people or places)", "oriental food", "perfumed soap", "hygiene" (p259)<br><br>Intermittent and cumulative exposure, along with childhood exposure, were not mentioned as causes of skin cancer<br><br><u>Perceived susceptibility</u><br>Some participants expressed understandings of personal susceptibility that were correct, e.g. "skin cancer not in the family" and "dark skin and eyes" (p260)<br><br>Other participants held beliefs about personal susceptibility that were erroneous, e.g. "very seldom ill", "not enough skin", "too old", "not hot enough in this country", "don't smoke, careful diet" (p260)<br><br><u>Skin self-examination</u> | **Limitations identified by author:**<br>'Self-selected' sample which may over-represent certain groups (e.g. those who are not afraid to talk about cancer or who are interested in health issues)<br>Interviews not recorded (due to background noise at venue), therefore relied upon written notes<br><br>**Limitations identified by review team**:<br>Convenience sample<br>Informed consent not obtained<br>Interviews not recorded – relied upon interviewer's note-taking<br>Analytic themes not derived from participants' conceptualisation of issues<br>Unclear how 'qualitative content analysis' was used – were responses considered to offer greater insight simply because they occurred more frequently or because they offered a richer insight into health beliefs?<br>Small sample size given the lack of depth in the analysis<br>No details given regarding the length of interviews – unclear whether these were genuinely in-depth interviews or simply conversations of indeterminate length with some note-taking<br>No demographic details of |

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| | | | 7/20 of the participants reported examining their skin for signs of skin cancer; reasons given as to why they considered this a worthwhile activity were "you need to know what is happening with your body", "for my own peace of mind", and "because it could be life saving" (p260)<br><br>Of those who did not perform skin self-examination, the reasons given for not doing so included: "Don't know what to look for", "any marks would be attributed to old age", and "Don't need to as I'm very sensible in the sun" (p260)<br><br><u>Health education</u><br>Views varied as to the importance of health education. Some participants felt that more publicity around skin cancer was not needed because "it may frighten people, a little knowledge is a dangerous thing" and "everything is taken too seriously today – it can give you things" (p260). Others welcomed publicity around skin cancer as "it brings it home to people" and "many people are still ignorant, despite information on TV" (p260)<br><br><u>Age</u><br>Some participants reported past behaviour, such as "sat in the sun when younger, thought it was good for your skin" (p260)<br>Some participants thought that health education should focus on younger people, as it was perceived that skin cancer cannot be detected in older people, e.g. "you would just think it was old age" and "older people have more moles" (p260)<br><br><u>Thought</u><br>The majority of participants stated that skin | participants provided except for age and gender<br>Quotations used are brief and de-contextualised; a number could be interpreted in different ways and there is no record that would enable critique of the authors' interpretation<br>Analysis presented mostly as a list which does not develop the data into a conceptual framework<br>Analysis treats people aged >55 as a homogeneous group, e.g. not differentiated by age, gender, or socio-economic status<br><br>**Evidence gaps and/or recommendations for future research:**<br>None stated<br><br>**Source of funding:**<br>None stated |

| Study details | Research parameters | Population and sample selection | Outcomes and methods of analysis<br>Findings | Notes |
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| | | | cancer was not a health issue that they ever thought about, although responses did range from “worry about it a lot” to “doesn’t do any good thinking about it” (p261)<br><br><u>Personal responsibility</u><br>Participants largely identified skin cancer as being preventable: “prevention is common sense”, “nowadays people should be conscious of these things”, and “it’s your own fault if you don’t go to the GP” (p261) | |

| Study details | Research parameters | Population and sample selection | Outcomes and methods of analysis Findings | Notes |
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| **Authors:** **Young, R.A., Logan, C., Lovato, C.Y., Moffat, B. & Shoveller, J.A.**<br><br>**Year:** **2005**<br><br>**Citation:** **Sun protection as a family health project in families with adolescents. Journal of Health Psychology 10 (3) 333-344**<br><br>**Quality score: (++, + or -)** **+**<br><br>**Note: Uses data from the same research project as Shoveller et al (2003)** | **What was/were the research questions:**<br>What are the characteristics of family sun-protection projects (defined as: 'intentional actions and goals that are socially-embedded and occur over the mid- or long-term' (p335)) as they occur in families with adolescents? What differences exist across families among these projects?<br><br>**What theoretical approach (e.g. Grounded Theory, IPA) does the study take (if specified):**<br>Action Theory ('emphasises intentional, socially-embedded joint actions and projects; provides a language to describe socially-meaningful, goal-directed behaviours that take place in the day-to-day lives of individuals and groups' (p335))<br><br>**How were the data collected:**<br>- **What method (s):**<br>2 stage semi-structured interviews conducted (separately) with adolescents and a parent, duration c.2 hours:<br>Stage 1 – video-taped exploratory interview, drawing on the participant's pre-prepared 'summertime memories chronicle'<br>Stage 2 – audio-taped reflective interview (to reflect on cognitions and emotions) in which the recording of Stage 1 of the interview was reviewed with a different researcher<br><br>Interviews were structured to explore factors relating to decision-making | **What population were the sample recruited from:**<br>3 communities (Vernon, Kelowna, Penticton) in Southern Interior of British Columbia, Canada (a region widely promoted as a 'sunbather's paradise')<br><br>**How were they recruited:**<br>5 waves of purposeful sampling using referrals from key community contacts, local newspaper and radio advertisements, notices in local community centres and outdoor recreation events aimed at adolescents<br><br>**How many participants were recruited:**<br>20 (adolescents n=10, one parent of each of the adolescents n=10)<br>For this study, the 20 participants had been randomly sampled from the original purposive sample of 40<br><br>**Were there specific exclusion criteria:**<br>None stated<br><br>**Were there specific inclusion criteria:**<br>Participants in each subsequent wave were recruited 'on the basis that they had the potential to | **Brief description of method and process of analysis:**<br>Interview transcripts were 'reviewed and coded following the principles of qualitative analysis within an action theory framework (Valach et al., 2002)' (p336) which focused on the parent-adolescent dyad and aimed to identify, describe and 'type' family projects related to sun protection. 2 of the study authors collaborated in order to code the transcripts using the action theory framework:<br>a) identifying goals and the functional steps taken to reach those goals (which may or may not be joint actions between parents and adolescents)<br>b) identifying the characteristics of joint actions (the communication, control and regulation of the project)<br>Family sun protection projects were classified as focused (explicit goals and functional steps) or diffused (few common strategies, or 'embedded' within other family projects)<br><br>The interview transcripts from the other 20 participants (from the dataset upon which this study drew) were then analysed to 'determine the adequacy of the classification of families' (p337). This classification was then presented and discussed with the study's other 2 co-authors in order to reach a consensus upon this classification<br><br>**Key themes (with illustrative quotes if available) relevant to this review:**<br><u>Characteristics of family sun-protection projects</u><br>Goals:<br>Sun protection goals were both short-term (e.g. discomfort of sunburn and heatstroke) and long-term (e.g. preventing wrinkles, skin | **Limitations identified by author:**<br>Interviews 'did not capture the actual parent-adolescent conversations and other actions that constitute sun-protection projects' (p343)<br><br>**Limitations identified by review team**:<br>Few quotations provided from the interviews<br>The participants' views and experiences are not used to develop a framework for analysis; the analysis reads more like a re-statement of the Action Theory framework rather than a close analysis of the participants' responses<br>The analysis is not as in-depth or rich as would be expected given the extensive methodological details<br>No rationale is given for focusing on the 2 case studies presented at the end of the analysis, which largely just repeat what is already contained in the earlier analysis<br><br>**Evidence gaps and/or recommendations for future research:**<br>The analysis of 'actual parent-adolescent conversations along with their accompanying internal cognitions… [may allow the description of] how |

| Study details | Research parameters | Population and sample selection | Outcomes and methods of analysis<br>Findings | Notes |
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| | about sun tanning, the role of peers and the fashion industry, family health patterns, perceived parental control, and the strategies implemented to address health issues (this structure evolved 'to reflect the emergent theoretical needs of the model building and hypothesis generating exercise inherent in a grounded theory study' (p303) as analysis of interviews progressed)<br><br>- **By whom:**<br>Two members of the research team<br><br>- **What setting(s):**<br>Not stated<br><br>- **When:**<br>2000-2001 | further inform the emerging theory' (p302 of Shoveller et al (2003)) | problems, skin cancer) – e.g. one participant wore sunscreen "because my cheeks get really burned", and her mother supported her by reminding her to apply sunscreen and discussing the negative effects of sunburn<br><br>Functional steps:<br>'Many families' took steps such as applying sunscreen, sitting in the shade, using an umbrella, avoiding the sun at certain times of the day, and wearing hats/t-shirts/sunglasses<br><br>Parents endeavoured to promote sun-protective behaviour in their children by setting rules, providing advice and supporting efforts made by schools to provide information about sun-protection<br><br>Projects are dynamic:<br>In many families, changes took place in projects 'after a critical incident involving a family member [e.g.] the experience of sunburn or the development of skin cancer' (p338) (these typically led to 'increased concern about sun protection and intensified efforts of protective measures' (p338))<br><br>The transition from childhood to adolescence was associated with the adolescents assuming more responsibility for their own sun-protective behaviour, although often still regulated in conjunction with their parents, e.g.:<br>"I don't normally go out to suntan because I know like you get cancer" (female, age 13) (this participant's sun-protection goals had 'evolved over time within her family, which she now pursued on her own volition' (p338))<br><br>'Parents continued to exercise some control over their children's behaviours in the sun, as | sun protection and related projects are constructed in families' (my edit) (p343)<br><br>**Source of funding:**<br>National Cancer Institute of Canada |

| Study details | Research parameters | Population and sample selection | Outcomes and methods of analysis Findings | Notes |
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| | | | well as educate and remind them of the importance of sun safety [whilst at the same time giving their children greater freedom to make their own decisions]' (p338)<br><br>Embeddedness in other projects:<br>e.g. the sun-protection project was part of the larger health-promotion project<br>This could lead to conflicting goals with sun-protection behaviour, e.g. participation in outdoor sports and the desire for a suntan.<br>Ambivalence was expressed regarding suntanning:<br>"… for some reason brown fat looks nicer than white fat… I've probably really bought into that whole thing and I buy the products that give me a tan, it's a liquid tan. And I'm not sure why that is, but probably that whole image of young, healthy and active… I like having a tan, it's funny… And of course, we know that it's damaging your skin while you are getting that wonderful tan" (mother) (edit in original) (p339)<br><br>Sun-protection could also have complementary goals with other projects, e.g. the 'relationship project' between parent and adolescent (where the goal was to maintain and develop the parent-child relationship).<br>This could take a number of forms: children acquiescing to their parents' demands regarding sun-protective behaviour, children negotiating more independence and responsibility, and/or parents relinquishing control whilst continuing to provide education and guidance<br><br><u>Differences in sun-protection projects between families</u><br>*Focused* sun-protection projects:<br>Parents 'demonstrated a strong commitment | |

| Study details | Research parameters | Population and sample selection | Outcomes and methods of analysis<br>Findings | Notes |
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| | | | to pursuing their goals [regarding sun protection]' and their children 'tended to trust the knowledge passed on by their parents, were motivated to pursue sun-protective goals and willing to forgo some of the perceived short-term benefits of sun tanning, such as feeling attractive and fitting in with a peer group' (p340)<br><br>*Diffused* sun-protection projects:<br>Families were less committed to sun-protection; there was less congruence between goals and functional steps. Although both parents and adolescents expressed some concerns regarding harmful effects of sun exposure, 'a lack of information or motivation, preoccupation with competing goals such as appearance or fitting in or the relative unimportance of sun protection as a family issue', e.g., for one mother who 'expressed concern about excessive skin exposure and took steps to educate her daughters about skin cancer… [but also] discussed the inconvenience of applying sunscreen':<br>"I should know better, but… I'm out in the garden and not paying attention, get wrapped up and sort of forget that the sun rays are going to be burning… I get a little burn. And it's almost an annual thing and it's silly, 'cause burns are really bad for your skin" (mother) (edit in original) (p340) | |

# Appendix 7 Studies excluded at full text stage

| Study | Abstract | Reason for exclusion |
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| Alberg et al. (2002) | Describes the knowledge, attitudes and practices of 7th-graders in Maryland with respect to sun protection and skin cancer. Concludes that a substantial proportion of youths were not protecting themselves adequately from sunlight. The overall low levels of knowledge accentuate the need to incorporate basic knowledge of skin cancer and sun protective behaviours in preventive interventions designed for this population. (Original abstract - amended) | Not qualitative research |
| Balato et al. (2007) | Skin cancer represents an increasingly worldwide public health problem. Because an estimated 50% to 80% of the skin's lifetime sun damage is thought to occur in childhood, it is during this critical period that excessive sun exposure is considered a risk factor for later development of skin cancer. Our objective was to investigate sun habits of children of Southern Italy. The population was a randomly selected sample of 800 parents of children who attended primary schools in Campania between December 2005 and September 2006. Interviews were conducted using a questionnaire, which provided information about sociodemographic characteristics, parents' knowledge about the risk of skin cancer, their level of education, and their and their children's sun-protection and sun-exposure habits. Our results show that 45% of the children were exposed to the sun less than 2 hours a day; it is important to notice that 71.2% often stayed in the sun from 11 am to 4 pm. About 40% of children had sunburns during holidays. These data show that prevention should imperatively be emphasized for improving sun-protection and sun-exposure habits | Not qualitative research |
| Bergenmar & Brandberg (2001) | The aim of the study was to describe attitudes toward sunbathing and sun protection, to examine sun-related behaviours, and to present an effort to change sun-related behaviours among young adults without a cancer diagnosis in melanoma-prone families. Ten patients were interviewed, and questionnaires were sent on 3 occasions during a 15-month period to the total population (n = 87) meeting the inclusion criteria. Data from interviews and questionnaires showed extensive ultraviolet-exposure behaviours in this high-risk group for melanoma, although not always expressed in terms of sunbathing. When asked about sunbathing, 1/3 reported sunbathing 'Often' or 'Very often,' despite a decrease in sunbathing during the study period. In addition, 35% reported current sun bed use. The most important reason for sunbathing was attractiveness. The risk of getting skin cancer was the most important reason to refrain from sunbathing. The majority estimated their own risk for melanoma as equal or lower compared with the general population. The planned intervention failed due to low attendance. Ultraviolet exposure is extensive. The individual perception of personal risk and the motivation to change behaviours are important factors to consider when designing a preventive program. Interest for group information was low in this age group | Not qualitative research |
| Boggild & From (2003) | - no abstract available - | Not qualitative research |
| Buchanan (2002) | Despite health campaigns and much publicity in the media on the dangers of overexposure to the sun, the incidence of skin cancer is rising. Community nurses have a vital role in educating patients about the need to use an appropriate sunscreen for their skin type and combing this with the use of protective clothing and taking measures to avoid overexposure. Cites 18 references. [Journal abstract] | Not qualitative research |
| Buller & Borland (1999) | Sun protection of children in North America and Europe is generally lower than desired and lower than in Australia. Provides a critical review of evaluations on the effects of 24 sun protection programmes for children under age 14. (Original abstract - amended) | Not qualitative research |
| Castle et al. (2008) | - no abstract available - | Not qualitative research |
| Clarke et al. (1997) | The study examined the roles of general and personal beliefs and skin type in relation to suntanning and sun protection, by assessing various perceptions of risk of skin cancer both for the self and for the average person. A sample of 355 people aged 16 to 25 years was selected randomly from the telephone directory of a coastal provincial city. Highly structured interviews were conducted over the telephone. The findings were presented in relation to three research questions. First, skin type, classified as burn only, burn then tan, or tan without burning, influenced both general and personal beliefs. Compared to the tan-only group, the burn-only group perceived earlier age at onset, greater number of years of life lost, and greater severity of skin cancer, for both the average person and the self, and greater susceptibility to skin cancer for the average person. Second, differences were found between personally relevant and population-relevant beliefs on susceptibility to skin cancer, time of onset, and years of life lost due to skin cancer but not for perceptions of severity and curability. Finally, skin cancer beliefs were poor correlates of tanning and protecting behaviours. The factor explaining the greatest proportion of variance in both behaviours was skin type | Not qualitative research |
| Clover et al. (1991) | A randomly selected community sample were surveyed regarding their knowledge of 5 common cancers; lung, bowel, melanoma, breast and cervical. Areas of knowledge commonly included in educational material were considered: the lifetime risk of developing each cancer, 5 year survival, preventable risk factors and the methods for early detection of each cancer. (Abstract amended) | Not qualitative research |

| Study | Abstract | Reason for exclusion |
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| Crane et al. (1999) | INTRODUCTION: This paper describes the evaluation of a skin cancer prevention program for preschools and daycare centers. The intervention was targeted primarily at staff of child care centers, with the aim of increasing use of sun protection practices for young children while attending these centers. Secondary target groups included parents and the children themselves. The intervention, which adopted the slogan, "Block the Sun, Not the Fun," included workshops for child care center staff, and information/activity packets for parents. METHODS: Twenty-seven preschools and daycare centers were randomly assigned to an intervention or wait-list control group. The intervention group received the intervention during the spring of 1994; the wait-list control group received the intervention during the spring of 1995. Evaluation consisted of interviews with center directors, observations of practices, and review of written policies before the intervention (in summer, 1993) and after the intervention (in summer, 1994). A survey of 201 parents was conducted during late summer 1994. RESULTS: While the intervention did not appear to change the sun protection attitudes or practices of parents, or use of clothing and shade at child care centers, results suggested significant changes in the sun protection knowledge/attitudes of center directors and the use of sunscreen at child care centers. Additionally, parents with children attending centers in the intervention group were more likely to be satisfied with sun protection practices at their centers. CONCLUSION: This low-intensity intervention appears to be effective at changing sun protection attitudes and sunscreen use at child care centers, and can be easily replicated. However, high staff turnover at child care centers would suggest that "boosters" will be necessary to sustain the impact. More intensive efforts directed at social norms are likely to be necessary to change clothing and outdoor play practices | Not qualitative research |
| Escoffery et al. (2008) | Though process evaluation of health programs has received growing attention, few interventions have reported process evaluation over multiple years. This article describes 2 years of process evaluation (2003-04) for the Pool Cool Diffusion Trial. Pool Cool is a skin cancer prevention program designed to increase sun protection habits among children and improve organizational and environmental supports for sun protection at swimming pools. Each year, 80 telephone interviews and 40 site visits at pools across the United States were completed, to examine how fully the program was implemented and the extent of use of program components between the two study conditions. Major components of the Pool Cool program, including sun safety lessons, sun safety signs and sunscreen use, had high implementation. Between the 2 years, most of the core elements were either maintained or increased in use. There were no significant differences between the basic and enhanced conditions on implementation. Reasons given for successful implementation were the provision of a toolkit, ease of implementing the program, pool staff and children enjoying the program and the field coordinators' support. These data provide information on programmatic factors that contribute to successful program diffusion | Not qualitative research |
| Garvin & Eyles (1997) | A case study examining the relationship between ozone depletion, UV radiation and skin cancer shows how scientific uncertainty is reduced and, through consensus building, translated into certainty in public health messages. Using narrative analysis we examine Canadian consensus statements on the dangers of UV and reconstruct the supporting logical claims and scientific evidence. Though considerable uncertainty remains about the relationship between the environment and skin cancer, both public health messages and the UV-Index formalize uncertainty and risk; concern then shifts from the less-certain, scientific realm into the apparently more-certain arena of public health messages. In this process the distinctions between science and policy become blurred. The case can be interpreted in two ways: as the result of various players acting in their self-interests or as a moral drama based on the importance of simple, clear messages to allow 'correct' actions | Not barriers/facilitators content related to relevant information sources |
| Hairon (2007) | A new survey has found that people have become more concerned about skin cancer but many still neglect to follow sun protection advice. The author reports. Cites three references. [Journal abstract] | Not qualitative research |
| Halpern & Kopp (2005) | BACKGROUND: The incidence of nonmelanoma skin cancer (NMSC) has dramatically increased worldwide. In areas of high incidence this will place a significant burden on the health system. Objectives To establish the awareness, knowledge and attitudes of the general public to NMSC and provide an overview on their level of understanding and knowledge of preventative measures. METHODS: Two thousand and one hundred Caucasian and Hispanic individuals, aged 40-75 years, from the UK, Italy, Germany, Spain, France, the USA and Australia were randomly selected to participate in this market research survey. In a structured telephone interview lasting approximately 10 min, respondents answered questions on NMSC, specifically actinic keratosis (AK) and basal cell carcinoma (BCC). RESULTS: Overall, 6% of respondents had been diagnosed with NMSC, of which the incidence was highest in Australia and the USA. The frequency of skin cancer detection examinations was also greater within these populations. Countries with a high incidence of NSMC had greater awareness of the condition, with more awareness of BCC than AK. The majority of respondents believed there was a correlation between skin cancer and sun exposure, however, a minority of respondents associated skin cancer with 'moderate' tanning. Overall, 86% of respondents claimed that they always took precautions against ultraviolet exposure when in the sun, but only 26% applied sunscreen most or all of the time when they were exposed to the sun for more than 1 h. In most of the countries, outside workers reported lower sunscreen use than other respondents. CONCLUSION: Nonmelanoma skin cancer awareness and prevention behaviours varied significantly among the countries studied. Improved population-specific documentation of skin cancer knowledge and prevention behaviours will facilitate the development and assessment of public health campaigns | Not qualitative research |

| Study | Abstract | Reason for exclusion |
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| Harvey (1996) | - no abstract available - | Not qualitative research |
| Hughes et al. (1996) | - no abstract available - | Not qualitative research |
| Ing et al. (2002) | Farmers are at higher risk for skin cancer; US studies indicate that they do not use adequate sun protection. Little data on Canadian farmers' sun exposure are available, and a literature review suggests a strong need to develop a comprehensive, easy to complete farmers' sun safety survey in order to identify sun safety issues in the farming community. A literature review contributed to the development of a draft farmers' sun safety survey. Preliminary testing of the survey with 207 Ontario farmers supported the usefulness of the questionnaire, but weaknesses remained in phrasing and missed concepts. To augment the questionnaire's development, focus groups were held with farmers in four Ontario communities to clarify the phrasing of survey questions concerning the amount of sun exposure, the use of sun protection practices, family/personal history of skin cancer, and skin cancer attitudes and knowledge. This paper reports on what was learned substantively from these focus groups | Not barriers/facilitators content related to relevant information sources |
| Jansson et al. (2003) | Objective: To evaluate the effects on knowledge and attitudes towards the protection of children from ultraviolet (UV) exposure among students in a preschool vocational programme. The analyses included gender and socioeconomic differences, and changes in the response pattern during the intervention period setting: Upper secondary schools in the Child and Recreation Study Programme, Stockholm County, Sweden Method: Swedish school authorities run a vocational study programme for students aged 16-19 who have opted for work in preschool services. A lesson on UV protection (2 x 45-minutes) given by an external specialist in cancer prevention was integrated in the curriculum. A questionnaire was administered immediately after the lesson to assess attitudes to tanning and cognitive impact regarding UV protection of children. Field conditions allowed pretesting only for 24/1389 students. Resampling techniques were therefore applied by simulation of missing pretest values, and compared with classic pretesting by parametric and nonparametric tests results: Independent of the individual students' own attitudes towards UV exposure, the protection of children from sunburn was reported as important. Increased learning could be observed among female students | Not qualitative research |
| Jones et al. (2000) | This study, conducted at the end of a UK heatwave, used qualitative and quantitative questionnaire measures to investigate sun protection in the context of the potentially conflicting attractions of sun exposure. It examined attitudes to the good weather, beliefs about the benefits and harmful effects of the sun and perceptions of risk amongst a sample of students in the UK. Participants could think of more benefits than harmful effects of the sun for both their health and appearance. Most enjoyed sunbathing, protected themselves inadequately and did not intend to change this behaviour. Those who knew someone who had suffered skin cancer, who perceived higher risk and who wrote more about the harmful effects of skin cancer on their appearance (but not their health) were move likely to engage in skin protective behaviours | Not qualitative research |
| Kakourou et al. (1995) | We attempted to estimate the level of Greek mothers' knowledge relating to the harmful effects of sunlight and whether this knowledge led to protective measures for them and their children. Between September and November 1993, 315 mothers were randomly selected from the outpatient department of our hospital and interviewed by questionnaire about themselves and their children (56% boys, 44% girls, ages 1-12 yrs). Knowledge was estimated by an index score that for 28% of the mothers was considered poor, for 50% moderate, for 16% good, and for only 6% very good or excellent. The score was positively associated with parent education, urban residence, mother's job relevant to the cosmetics industry or the mass media, and history of sunburn in one or both parents. Scores were also established for sunlight-protective measures taken for themselves (28% poor, 45% moderate, 27% just good) and for their children (24% poor, 46% moderate, 30% just good). These scores were significantly associated only with mothers' knowledge of sun protection. Mothers who used sun protection for themselves also applied it to their children. This study shows that mothers in Greece should be encouraged both to increase their knowledge of sun protection and steadily incorporate it into their lifestyle | Not qualitative research |
| Melia et al. (2000) | To ensure effective primary prevention of skin cancer, aimed at changing behaviour in the sun, and ultimately at reducing the incidence and mortality rates from skin cancer, sufficient information needs to be known about the relationship between sun exposure and skin cancer, the effectiveness of sun protection measures, and the acceptability and uptake of protective measures by the general public. This review specifically addresses the quality and outcome of studies designed to evaluate the impact of primary prevention initiatives in the U.K. Four main areas of concern are highlighted: (i) teenage behaviour in the sun is difficult to change; (ii) fashion, in part, dictates adult and adolescent behaviour in the sun; (iii) there are practical problems related to response rates, follow-up and interpretation of self-reported behaviour; and (iv) a strategy for primary prevention in the U.K. may be falsely based on the experience and results of Australian and American programmes. Standardized methods for monitoring general population behaviour are needed in the U.K. Evaluation of interventions targeting specific groups, especially parents and young children, and the relative costs of different strategies should be reported. Primary prevention messages and strategies should be adapted to the type of ultraviolet radiation exposure experienced, and the overall low risk of melanoma, while addressing controversies on the health effects of sun exposure and sun screens | Not qualitative research |
| Miles et al. | The incidence of skin cancer has risen rapidly in the UK over the last 20 years, prompting public health organizations to try and raise awareness of the | Not qualitative |

| Study | Abstract | Reason for exclusion |
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| (2005) | dangers of sun exposure and the need to practice sun-safe behaviour. This study aimed to assess baseline levels of sun-safe knowledge and behaviour in a British population-representative sample, prior to the launch of Cancer Research UK's 'SunSmart' campaign. A face-to-face survey was conducted through the Office for National Statistics as part of their Omnibus survey. In total, 1848 men and women aged 18 and over were interviewed. Knowledge of what to do to reduce skin cancer risk was modest. Two-thirds mentioned avoiding the sun by seeking shade, 50% mentioned covering up and only 43% said to use high factor sunscreen. Practice of sun-safe behaviours was also poor, with only one-third saying they sought shade, covered up or used high factor sunscreen to protect themselves from the sun. Men and those from lower socioeconomic groups were least informed and least likely to report using sun-protective behaviours. Increases in both knowledge and use of appropriate sun-protective behaviours are needed if skin cancer incidence rates are to decrease | research |
| Perkins (1993) | Excessive sun exposure during childhood is an important factor in the aetiology of malignant melanoma. A pilot study was undertaken to discover what knowledge, if any, young children have of how to protect themselves from strong sunlight. Flashcards were used on five-to-eight-year-olds, both before and after a specific health education programme, on things they would take if they were going to spend all day outside. An encouraging finding was that the majority of children correctly identified four main items associated with sun protection. Following education the younger children showed significant increases in knowledge. It is, therefore, strongly recommended that health education on this topic is introduced in primary schools, as children understand and are receptive to the information. Cites 13 references | Not qualitative research |
| Reding et al. | To respond to major needs expressed by 15 farm family focus group participants, education interventions were designed to overcome barriers to primary prevention for skin cancer. Farmers are at high risk for developing skin cancer because of occupational exposure. In an attempt to increase skin cancer prevention education in a rural population, three demonstration projects were developed and field tested. Projects were designed to overcome barriers defined by the focus groups. One project evaluated a school-based education intervention. A second project evaluated a family-based education intervention. Knowledge gain was the evaluation endpoint of these two projects. Significant knowledge gain was demonstrated for these projects. A third project was designed to deliver skin cancer information directly to farmers using veterinarians. Farmers found this method of delivery acceptable | Not qualitative research |
| Richards et al. (2004) | - no abstract available - | Not qualitative research |
| Rigel & Skouge (1999) | - no abstract available - | Not barriers/facilitators content related to relevant information sources |
| Robinson et al. (2008) | OBJECTIVE: To compare knowledge, attitudes, and behavior about indoor tanning and sources of information among young adults in the summer of 1988, 1994, and 2007. DESIGN: Convenience survey of 100 Chicago, Illinois, beachgoers aged 18 to 30 years who were age- and sex-matched with Chicago-area residents who participated in random-digit-dialled telephone interviews in 1988 and 1994. SETTING: Lakefront beach on weekday afternoons in July 2007. MAIN OUTCOME MEASURES: Knowledge of melanoma/skin cancer link with tanning, and limiting tanning to help prevent melanoma/skin cancer; attitude about the appearance of tanned people; and knowledge of relevant information sources; and UV indoor tanning use in the past year. RESULTS: Knowledge of the melanoma/skin cancer link with tanning changed from 1988 (42%) to 1994 (38%) to 2007 (87%). Knowledge of limiting tanning to help prevent melanoma increased from 1988 (25%) to 1994 (77%), but decreased from 1994 to 2007 (67%). This decline in knowledge about limiting tanning was concurrent with an increase in the attitude that having a tan looks better (1994, 69%; 2007, 81%). Use of indoor tanning beds increased from 1988 (1%) to 1994 (26%) and remained at the same level in 2007 (27%). Although physicians, especially dermatologists, were sources of information about tanning (1988, 2%; 1994, 18%; 2007, 31%) and were considered the most trusted source, only 14% of respondents in 1994 and 2007 reported ever talking to a doctor about indoor tanning. Conclusion Because young adults report that physicians are their most trusted source of information about tanning, a potential opportunity exists for physicians to influence indoor tanning behavior by counselling their patients | Not qualitative research |
| Smithson & Heslop (2008) | - no abstract available - | Not qualitative research |
| Stanton et al. (2004) | - no abstract available - | Not qualitative research |
| Trevena & Reeder (2007) | AIM: To assess perceptions about potentially modifiable causes of cancer. METHODS: An anonymous telephone questionnaire administered to a sample, 20 years and older, randomly selected from telephone directory listings. RESULTS: Nearly 90% of 438 respondents (68% participation) considered that there were things which people could do to reduce cancer risk. Unprompted, almost two-thirds mentioned nutrition, and more than half | Not qualitative research |

| Study | Abstract | Reason for exclusion |
|---|---|---|
| | suggested 'not smoking.' Other suggestions included being physically active, and protection from excessive sun exposure. Two-thirds believed they could reduce their own risk, and by interview end this increased significantly to 72%. Half named items which people could consume to reduce risk: more vegetables, fruit or water; less alcohol, fatty foods, and meat. Greatest awareness was of risks from sunburn, secondhand tobacco smoke, sunlamps, eating animal fat, and being overweight, and of the protective effects of eating grains, fruit, and vegetables. Many considered stress, cellular phones, and genetically modified foods as risks, and vitamin and mineral supplements as protective. Few indicated awareness of risks from hepatitis B or alcohol. CONCLUSIONS: Greater public awareness about avoiding tobacco smoking and excessive sun exposure suggests gains from past efforts. To achieve similar awareness for other cancer prevention strategies, and to correct misconceptions, comparable resources and efforts are likely to be required | |
| Turner & Mermelstein (2005) | - no abstract available - | Not qualitative research |
| Vallejos et al. (2008) | BACKGROUND: This study estimates the prevalence of self-reported skin problems among Latino farmworkers and identifies associated risk factors. METHODS: The study used a longitudinal surveillance design. Participants were interviewed up to five times and reported skin problems and personal, work, and environment characteristics. Frequencies and counts were calculated for 13 skin problems. Adjusted odds ratios were obtained for six skin problems. RESULTS: More than one-third of participants reported skin problems, including skin and nail fungus; sunburn; bumps, pimples, or acne; calluses; itching; rash; and insect bite. A variety of work and environment factors were associated with higher rates of skin problems. One of the strongest predictors was working in wet clothes or shoes. CONCLUSIONS: Programs are needed to educate farmworkers about measures they can take to decrease their risk of skin problems. Changes in work practices and personal protective equipment provided could help decrease the prevalence of skin problems | Not qualitative research |
| Weber et al. (2007) | The acceptance and usability of personal protection against solar UV radiation was evaluated in a field study with a group of tinsmiths in Austria. The personal protective measures (PPM) tested involved four categories: shirts, headwear, sunglasses and topically applied sunscreens; at least six different products per category were tested. Recommendations for the 'ideal' shirt, headwear, pair of sunglasses and topical sunscreen are given based on data from questionnaires, i.e., from the point of view of the workers, independently from the actual physical level of protection (such as low transmittance or area of coverage) provided. It is argued that in practice it is important to consider the acceptance and usability of protective measures as well as the level of physical protection when providing PPM | Not qualitative research |

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