

NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Sunlight Exposure: Communicating the Benefits and Risks of Ultraviolet Light to the General Population: Effectiveness and Cost-Effectiveness Review

Final Appendices

AUGUST 2014

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APPENDIX A

Search Strategy

Database name	MEDLINE and MEDLINE In-Process
Database host	Ovid SP
Database coverage dates	1946 to current (updated daily)
Searcher	Hannah Wood
Search date	26/02/14
Search strategy checked by	Mick Arber (information specialist YHEC), Paul Levay (information specialist NICE)
Number of records retrieved	5433 (search 1 26/02/14) 552 (search 2 02/03/14)
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	Search 1: 5431 (2 records imported direct to Duplicates Library) Search 2: 45 (507 imported direct to Duplicates Library)
Reference numbers of records in EndNote library	1-5431, 11617-11661
Number of records after de-duplication in EndNote library	5468

Database: Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) <1946 to Present>

Search Strategy:

- 1 sunlight/ or ultraviolet rays/ or sunburn/ or sunbathing/ or suntan/ or exp sunscreens agents/ or sun protection factor/ (77655)
- 2 ((sun or suns or sunning or sunshine or sunlight\$) adj3 (damag\$ or protect\$ or safe or safety or risk\$ or benefit\$1 or beneficial or index or indexes or exposure\$1 or overexposure\$1 or expose\$1 or overexpose\$1 or underexpose\$1 or underexposure\$1)).ti,ab,kf. (10175)
- 3 ((uv or uva or uvb or uvc or ultra-violet or ultraviolet or solar) adj3 (ray\$1 or radiation or irradiat\$ or damag\$ or protect\$ or safe or safety or risk\$ or benefit\$1 or beneficial or index or indexes or exposure\$1 or overexposure\$1 or expose\$1 or overexpose\$1)).ti,ab,kf. (50803)
- 4 (sunscreen\$ or sun-screen\$ or sunblock\$ or sun-block\$ or spf or sunburn\$ or sun-burn\$ or photo-damag\$ or photodamag\$ or photoag\$ or photo-ag\$ or photo-expos\$ or photoexpos\$).ti,ab,kf. (12542)
- 5 (sunbath\$ or sun-bath\$ or suntan\$ or tan or tans or tanning or tanned or sunbed\$1 or sunbed\$ or sunlamp\$1 or sun-lamp\$ or solarium\$1 or solaria\$).ti,ab,kf. (6525)
- 6 Melanoma/pc or Melanoma/px or exp Vitamin D Deficiency/pc or exp Vitamin D Deficiency/px or exp Skin Neoplasms/pc or exp Skin Neoplasms/px (6744)
- 7 (vitaminD\$1 or vitamin D or cholecalciferol\$ or colecalciferol\$ or ergocalciferol\$ or calciferol\$ or alfacalcidol\$).ti. (20093)
- 8 (osteomalacia or rickets or hypovitaminosis D).ti. (5728)
- 9 ((skin or skins) adj3 (cancer\$ or neoplasm\$ or tumor\$ or tumour\$ or carcinoma\$ or malignan\$)).ti. (10244)
- 10 (melanoma\$ or basal cell carcinoma\$ or squamous cell carcinoma\$).ti. (78266)
- 11 or/1-10 (217836)
- 12 health communication/ or persuasive communication/ or communication barriers/ or communication/ (68186)
- 13 health promotion/ or health education/ or exp consumer health information/ or patient education as topic/mass me (164295)
- 14 communications media/ or exp mass media/ or pamphlteaching ets/ or electronic mail/ or exp teaching materials/ or exp educational technology/ or exp programmed instruction/ or exp telephone/ or exp internet/ or telecommunications/ or electronic mail/ (167738)
- 15 exp marketing/ or information dissemination/ or probability learning/ (40245)
- 16 Primary Prevention/ (13718)
- 17 counseling/ or exp directive counseling/ or behavior therapy/ or cognitive therapy/ or mentors/ or peer group/ (84030)
- 18 ed.fs. (215110)
- 19 health communication.jn. (843)
- 20 journal of health communication.jn. (1146)
- 21 ((risk\$ or probabilit\$ or uncertain\$ or message\$1 or communicat\$ or marketing or advice or advise\$ or advising or appeal\$1 or loss or gain or positive\$ or negative\$) adj3 (frame or framed or framing)).ti,ab,kf. (788)

- 22 ((risk\$ or probabilit\$ or uncertain\$) adj3 (notif\$ or inform\$ or message\$1 or communicat\$ or marketing or campaign\$ or publiciz\$ or publicis\$ or publicity or advice or advise\$ or advising or perceive\$ or perception\$)).ti,ab,kf. (20807)
- 23 ((tailor\$ or personal\$ or individual\$ or targeted or targeting) adj3 (message\$1 or material\$1 or communica\$ or feedback or feed back or promot\$ or market\$ or campaign\$)).ti,ab,kf. (11805)
- 24 ((cognitive or cognition or associative or affective or positiv\$ or negativ\$) adj3 message\$1).ti,ab,kf. (450)
- 25 (decision aid\$1 or decision tool\$1 or decision support\$).ti,ab,kf. (8797)
- 26 ((shared or informed) adj3 (decision\$1 or choice\$1)).ti,ab,kf. (9034)
- 27 ((health\$ or health care or lifestyle\$ or life style\$1 or consumer\$1) adj2 (information or message\$1 or communicat\$)).ti,ab,kf. (23827)
- 28 (education\$ adj2 (program\$ or intervention\$1 or meeting\$1 or session\$1 or strateg\$ or workshop\$1 or visit\$ or material\$1)).ti,ab,kf. (46155)
- 29 (behavio?r\$ adj2 intervention\$).ti,ab,kf. (7438)
- 30 (outreach or out reach).ti,ab,kf. (7715)
- 31 ((family or families or parent\$ or care-giver\$ or caregiver\$ or carer or carers or guardian\$ or wife or wives or husband or husbands or spouse\$1 or spousal or partner or partners or mother\$ or father\$ or teacher\$1) adj3 (led or educat\$ or train\$ or teach or teaches or teaching or taught or involv\$ or intervention\$ or program\$ or session\$1)).ti,ab,kf. (60428)
- 32 (work-based or workplace-based or worksite-based or community-led or community-based or community-wide or community-centred or community-centered or community-run or community intervention\$ or community program\$ or community scheme\$ or faith-based or faith-led or church-based or church-led).ti,ab,kf. (40048)
- 33 ((work or workplace\$ or work place\$ or employer\$ or school\$ or playschool\$ or preschool\$ or nursery or nurseries or kindergarten\$ or creche\$ or highschool\$ or afterschool) adj3 (led or educat\$ or train\$ or teach\$ or involv\$ or intervention\$ or program\$ or session\$1)).ti,ab,kf. (40392)
- 34 ((health\$ worker\$ or health-care worker\$ or health\$ professional\$ or health-care professional\$ or health\$ personnel or health-care personnel or general-practitioner\$ or gp or gps or nurse\$1 or health visitor\$1 or midwife or midwives or clinician\$1 or pharmacist\$ or primary care or general practice or family doctor\$1 or family practi\$ or dermatologist\$1 or nutritionist\$1) adj3 (led or educat\$ or train\$ or teach\$ or involv\$ or intervention\$ or program\$ or session\$1)).ti,ab,kf. (54511)
- 35 ((brief or opportunist\$ or concise or short or direct or lifestyle or written or oral or verbal or personali?ed or individuali?ed or motivational) adj2 (advice or negotiation\$ or guidance or discussion\$ or encouragement or intervention\$ or program\$ or meeting\$ or session\$ or interview\$)).ti,ab,kf. (24160)
- 36 ((community or consumer or pressure) adj (group\$1 or organi?ation\$1)).ti,ab,kf. (3582)
- 37 (coach\$ or mentor\$ or counsel\$ or champion\$ or self-study or self-guided).ti,ab,kf. (85759)
- 38 ((opinion or education\$ or influential) adj1 leader\$).ti,ab,kf. (1172)
- 39 ((group or peer) adj2 (educat\$ or support\$)).ti,ab,kf. (9984)
- 40 (pictogram\$ or picto-gram\$ or pictograph\$ or picto-graph\$ or infogram\$ or info-gram\$ or infographic\$ or info-graphic\$).ti,ab,kf. (277)
- 41 ((graphic\$ or visual\$ or pictorial or illustra\$ or print\$) adj3 (image\$1 or stimuli or display\$ or dissemin\$ or present or presented or presentation\$1 or communicat\$ or message\$1 or advice or feedback or feed back or inform or information or aid or aids or representation\$1 or material\$1)).ti. (6486)
- 42 ((data or statistic\$ or graph or graphs or numeric\$ or verbal or textual or written) adj3 (stimuli or display\$1 or dissemin\$ or presented or presentation\$1 or communicat\$ or message\$1 or advice or feedback or feed back or inform or information or aid or aids or representation\$1 or material\$1)).ti. (3579)
- 43 ((story or stories or narrative\$1 or testimon\$ or first person) not narrative review\$1).ti,ab,kf. (36417)
- 44 (mass media\$ or new media\$ or national media\$ or local media\$ or regional media\$ or social media\$ or social network\$ or marketing or marketed or television\$1 or tele-vision\$1 or tv or advert\$ or billboard\$1 or bill-board\$1 or poster\$1 or cinema\$ or video\$1 or newspaper\$1 or news or magazine\$1 or journalis\$ or comic\$1 or cartoon\$1 or leaflet\$1 or pamphlet\$1 or booklet\$1 or workbook\$1 or work-book\$1 or handbook\$1 or hand-book\$1 or radio or radios or internet or multimedia or multi-media or web or website\$ or interactive or inter-active or facebook or twitter or youtube or you-tube or mail\$ out\$1 or mailout\$1 or mail-shot\$1 or mailshot\$1 or flyer\$1).ti,ab,kf. (286299)

- 45 (phone\$1 or telephone\$1 or smartphone\$1 or email\$1 or e mail or electronic mail\$1 or text messag\$ or texting or sms or short messag\$ or app or apps or android\$ or blackberr\$ or iphone\$1 or ipad\$1 or ehealth or e health or mhealth or m health or telehealth\$ or tele-health\$).ti,ab,kf. (75360)
- 46 (media\$1 adj3 (coverage or report\$ or article\$ or content\$ or present\$ or discuss\$ or messag\$ or campaign\$)).ti,ab,kf. (12205)
- 47 (appearance adj3 (based or focused or orientated)).ti,ab,kf. (973)
- 48 ((uv or ultra-violet or ultraviolet) adj4 (photo\$1 or photograph\$ or image\$1 or imaging)).ti,ab,kf. (1276)
- 49 ((lifestyle\$ or behavior\$ or behaviour\$) adj3 (change\$ or changing or modification\$ or modify\$ or modifies)).ti,ab,kf. (52416)
- 50 "attitude of health personnel"/ or exp attitude to health/ or awareness/ (365804)
- 51 risk reduction behavior/ or risk-taking/ or motivation/ or intention/ or social desirability/ (80511)
- 52 professional-patient relations/ or nurse-patient relations/ or physician-patient relations/ (108749)
- 53 exp professional role/ (64878)
- 54 (skinsafe\$ or sunsafe\$ or sunsmart\$ or sunwise\$ or pool cool or kidskin or kid skin or slipslopslap or slip slop slap or shunburn or shun burn).ti,ab,kf. (81)
- 55 or/12-53 (1603908)
- 56 ((sun or suns or sunning or sunshine or sunlight\$ or sunbath\$ or suntan\$ or sunbed\$1 or sunlamp\$1 or sunscreen\$ or sunblock\$ or solarium\$1 or solaria\$ or uv or uva or uvb or uvc or ultraviolet or ultra-violet or tan or tans or tanning or tanned or spf) adj5 (risk\$ or benefit\$ or protect\$ or exposure\$ or safe\$) adj5 (knowledg\$ or attitude\$ or behavio\$ or value\$ or understand\$ or belief\$ or believe or perception\$ or perceive\$ or view or views or prefer\$ or intention\$ or habit\$1 or practice\$ or comply or complies or compliance or adhere\$1 or adherence or concordance or accordance or accept\$ or motivation\$1 or awareness\$ or uptake or up-take or takeup or take-up or barrier\$1 or facilitator\$1 or utilis\$ or utiliz\$)).ti,ab,kf. (1481)
- 57 (11 and 55) or (56 or 54) (8050)
- 58 exp animals/ not humans/ (3880949)
- 59 (news or editorial or letter or comment or historical article or case reports).pt. (3214096)
- 60 case report.ti. (155657)
- 61 57 not (58 or 59 or 60) (6778)
- 62 limit 61 to (english language and yr="1994 -Current") (5486)
- 63 remove duplicates from 62 (5433)

Search carried out 05/03/14 to add Health Behavior/ as a MeSH heading for concept 2

Database: Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) <1946 to Present>

Search Strategy:

- 1 Health Behavior/ (32187)
- 2 sunlight/ or ultraviolet rays/ or sunburn/ or sunbathing/ or suntan/ or exp suncreening agents/ or sun protection factor/ (77707)
- 3 ((sun or suns or sunning or sunshine or sunlight\$) adj3 (damag\$ or protect\$ or safe or safety or risk\$ or benefit\$1 or beneficial or index or indexes or exposure\$1 or overexposure\$1 or expose\$1 or overexpose\$1 or underexpose\$1 or underexposure\$1)).ti,ab,kf. (10207)
- 4 ((uv or uva or uvb or uvc or ultra-violet or ultraviolet or solar) adj3 (ray\$1 or radiation or irradiat\$ or damag\$ or protect\$ or safe or safety or risk\$ or benefit\$1 or beneficial or index or indexes or exposure\$1 or overexposure\$1 or expose\$1 or overexpose\$1)).ti,ab,kf. (50867)
- 5 (sunscreen\$ or sun-screen\$ or sunblock\$ or sun-block\$ or spf or sunburn\$ or sun-burn\$ or photo-damag\$ or photodamag\$ or photoag\$ or photo-ag\$ or photo-expos\$ or photoexpos\$).ti,ab,kf. (12562)
- 6 (sunbath\$ or sun-bath\$ or suntan\$ or tan or tans or tanning or tanned or sunbed\$1 or sun-bed\$ or sunlamp\$1 or sun-lamp\$ or solarium\$1 or solaria\$).ti,ab,kf. (6533)
- 7 Melanoma/pc or Melanoma/px or exp Vitamin D Deficiency/pc or exp Vitamin D Deficiency/px or exp Skin Neoplasms/pc or exp Skin Neoplasms/px (6748)

8 (vitaminD\$1 or vitamin D or cholecalciferol\$ or coledalciferol\$ or ergocalciferol\$ or calciferol\$ or alfalcidol\$.ti. (20149)
9 (osteomalacia or rickets or hypovitaminosis D).ti. (5730)
10 ((skin or skins) adj3 (cancer\$ or neoplasm\$ or tumor\$ or tumour\$ or carcinoma\$ or malignan\$)).ti. (10255)
11 (melanoma\$ or basal cell carcinoma\$ or squamous cell carcinoma\$.ti. (78358)
12 or/2-11 (218108)
13 1 and 12 (650)
14 exp animals/ not humans/ (3882912)
15 (news or editorial or letter or comment or historical article or case reports).pt. (3217266)
16 case report.ti. (155867)
17 13 not (14 or 15 or 16) (594)
18 limit 17 to (english language and yr="1994 -Current") (552)

Database name	Embase
Database host	Ovid SP
Database coverage dates	1974 to 26 February 2014
Searcher	Hannah Wood
Search date	27/02/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	7668
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	4096 (3572 records imported direct to Duplicates Library)
Reference numbers of records in EndNote library	5432-9527
Number of records after de-duplication in EndNote library	3343

Database: Embase <1974 to 2014 February 26>

Search Strategy:

1 sunlight/ (11465)
2 sunburn/ (3698)
3 sunbathing/ (296)
4 suntan/ (67)
5 exp sunscreen/ (26254)
6 sun exposure/ (9042)
7 ((sun or suns or sunning or sunshine or sunlight\$) adj3 (damag\$ or protect\$ or safe or safety or risk\$ or benefit\$1 or beneficial or index or indexes or exposure\$1 or overexposure\$1 or expose\$1 or overexpose\$1 or underexpose\$1 or underexposure\$1)).ti,ab. (14132)
8 ((uv or uva or uvb or uvc or ultra-violet or ultraviolet or solar) adj3 (ray\$1 or radiation or irradiat\$ or damag\$ or protect\$ or safe or safety or risk\$ or benefit\$1 or beneficial or index or indexes or exposure\$1 or overexposure\$1 or expose\$1 or overexpose\$1)).ti,ab. (57770)
9 (sunscreen\$ or sun-screen\$ or sunblock\$ or sun-block\$ or spf or sunburn\$ or sun-burn\$ or photo-damag\$ or photodamag\$ or photoag\$ or photo-ag\$ or photo-expos\$ or photoexpos\$.ti,ab. (16529)
10 (sunbath\$ or sun-bath\$ or suntan\$ or tan or tans or tanning or tanned or sunbed\$1 or sunbed\$ or sunlamp\$1 or sun-lamp\$ or solarium\$1 or solaria\$.ti,ab. (8757)
11 exp skin cancer/pc or skin tumors/pc (3501)
12 vitamin D deficiency/pc [Prevention] (903)
13 exp rickets/pc [Prevention] (695)
14 (vitaminD\$1 or vitamin D or cholecalciferol\$ or coledalciferol\$ or ergocalciferol\$ or calciferol\$ or alfalcidol\$.ti. (27520)
15 (osteomalacia or rickets or hypovitaminosis D).ti. (6619)
16 ((skin or skins) adj3 (cancer\$ or neoplasm\$ or tumor\$ or tumour\$ or carcinoma\$ or malignan\$)).ti. (12916)
17 (melanoma\$ or basal cell carcinoma\$ or squamous cell carcinoma\$.ti. (101120)
18 or/1-17 (251409)

- 19 medical information/ (50414)
- 20 persuasive communication/ (6506)
- 21 communication disorder/ (6905)
- 22 interpersonal communication/ (114806)
- 23 health education/ or health literacy/ or health promotion/ or parenting education/ or school
health education/ or patient education/ (226091)
- 24 consumer health information/ (2296)
- 25 exp *mass communication/ (140604)
- 26 exp teaching/ (65861)
- 27 marketing/ (15543)
- 28 information dissemination/ (13993)
- 29 *primary prevention/ (5755)
- 30 social marketing/ (2597)
- 31 counseling/ or directive counseling/ or motivational interviewing/ or patient counseling/ or
patient guidance/ or peer counseling/ (73453)
- 32 health communication.jn. (726)
- 33 journal of health communication.jn. (1130)
- 34 ((risk\$ or probabilit\$ or uncertain\$ or message\$1 or communicat\$ or marketing or advice or
advise\$ or advising or appeal\$1 or loss or gain or positive\$ or negative\$) adj3 (frame or
framed or framing)).ti,ab. (938)
- 35 ((risk\$ or probabilit\$ or uncertain\$) adj3 (notif\$ or inform\$ or message\$1 or communicat\$ or
marketing or campaign\$ or publiciz\$ or publicis\$ or publicity or advice or advise\$ or advising
or perceive\$ or perception\$)).ti,ab. (27672)
- 36 ((tailor\$ or personal\$ or individual\$ or targeted or targeting) adj3 (message\$1 or material\$1
or communica\$ or feedback or feed back or promot\$ or market\$ or campaign\$)).ti,ab.
(16015)
- 37 ((cognitive or cognition or associative or affective or positiv\$ or negativ\$) adj3
message\$1).ti,ab. (513)
- 38 (decision aid\$1 or decision tool\$1 or decision support\$).ti,ab. (11081)
- 39 ((shared or informed) adj3 (decision\$1 or choice\$1)).ti,ab. (11689)
- 40 ((health\$ or health care or lifestyle\$ or life style\$1 or consumer\$1) adj2 (information or
message\$1 or communicat\$)).ti,ab. (29496)
- 41 (education\$ adj2 (program\$ or intervention\$1 or meeting\$1 or session\$1 or strateg\$ or
workshop\$1 or visit\$ or material\$1)).ti,ab. (60795)
- 42 (behavio?r\$ adj2 intervention\$).ti,ab. (9853)
- 43 (outreach or out reach).ti,ab. (9957)
- 44 ((family or families or parent\$ or care-giver\$ or caregiver\$ or carer or carers or guardian\$ or
wife or wives or husband or husbands or spouse\$1 or spousal or partner or partners or
mother\$ or father\$ or teacher\$1) adj3 (led or educat\$ or train\$ or teach or teaches or
teaching or taught or involv\$ or intervention\$ or program\$ or session\$1)).ti,ab. (70572)
- 45 (work-based or workplace-based or worksite-based or community-led or community-based r
community-wide or community-centred or community-centered or community-run or
community intervention\$ or community program\$ or community scheme\$ or faith-based or
faith-led or church-based or church-led).ti,ab. (49322)
- 46 ((work or workplace\$ or work place\$ or employer\$ or school\$ or playschool\$ or preschool\$
or nursery or nurseries or kindergarten\$ or creche\$ or highschool\$ or afterschool) adj3 (led
or educat\$ or train\$ or teach\$ or involv\$ or intervention\$ or program\$ or session\$1)).ti,ab.
(51446)
- 47 ((health\$ worker\$ or health-care worker\$ or health\$ professional\$ or health-care
professional\$ or health\$ personnel or health-care personnel or general-practitioner\$ or gp or
gps or nurse\$1 or health visitor\$1 or midwife or midwives or clinician\$1 or pharmacist\$ or
primary care or general practice or family doctor\$1 or family practi\$ or dermatologist\$1 or
nutritionist\$1) adj3 (led or educat\$ or train\$ or teach\$ or involv\$ or intervention\$ or
program\$ or session\$1)).ti,ab. (70475)
- 48 ((brief or opportunist\$ or concise or short or lifestyle or written or oral or verbal or
personali?ed or individuali?ed or motivational) adj2 (advice or negotiation\$ or guidance or
discussion\$ or encouragement or intervention\$ or program\$ or meeting\$ or session\$ or
interview\$)).ti,ab. (33345)
- 49 ((community or consumer or pressure) adj (group\$1 or organi?ation\$1)).ti,ab. (4451)
- 50 (coach\$ or mentor\$ or counsel\$ or champion\$ or self-study or self-guided).ti,ab. (113944)
- 51 ((opinion or education\$ or influential) adj1 leader\$).ti,ab. (1451)
- 52 ((group or peer) adj2 (educat\$ or support\$)).ti,ab. (13625)

- 53 (pictogram\$ or picto-gram\$ or pictograph\$ or picto-graph\$ or infogram\$ or info-gram\$ or infographic\$ or info-graphic\$).ti,ab. (447)
- 54 ((graphic\$ or visual\$ or pictorial or illustra\$ or print\$) adj3 (image\$1 or stimuli or display\$ or dissemin\$ or present or presented or presentation\$1 or communicat\$ or message\$1 or advice or feedback or feed back or inform or information or aid or aids or representation\$1 or material\$1)).ti. (7386)
- 55 ((data or statistic\$ or graph or graphs or numeric\$ or verbal or textual or written) adj3 (stimuli or display\$1 or dissemin\$ or presented or presentation\$1 or communicat\$ or message\$1 or advice or feedback or feed back or inform or information or aid or aids or representation\$1 or material\$1)).ti. (4247)
- 56 ((story or stories or narrative\$1 or testimon\$ or first person) not narrative review\$1).ti,ab. (44738)
- 57 (mass media\$ or new media\$ or national media\$ or local media\$ or regional media\$ or social media\$ or social network\$ or marketing or marketed or television\$1 or tele-vision\$1 or tv or advert\$ or billboard\$1 or bill-board\$1 or poster\$1 or cinema\$ or video\$1 or newspaper\$1 or news or magazine\$1 or journalis\$ or comic\$1 or cartoon\$1 or leaflet\$1 or pamphlet\$1 or booklet\$1 or workbook\$1 or work-book\$1 or handbook\$1 or hand-book\$1 or radio or radios or internet or multimedia or multi-media or web or website\$ or interactive or inter-active or facebook or twitter or youtube or you-tube or mail\$ out\$1 or mailout\$1 or mail-shot\$1 or mailshot\$1 or flyer\$1).ti,ab. (375469)
- 58 (phone\$1 or telephone\$1 or smartphone\$1 or email\$1 or e mail or electronic mail\$1 or text messag\$ or texting or sms or short messag\$ or app or apps or android\$ or blackberr\$ or iphone\$1 or ipad\$1 or ehealth or e health or mhealth or m health or telehealth\$ or tele-health\$).ti,ab. (104095)
- 59 (media\$1 adj3 (coverage or report\$ or article\$ or content\$ or present\$ or discuss\$ or messag\$ or campaign\$)).ti,ab. (17671)
- 60 (appearance adj3 (based or focused or orientated)).ti,ab. (1174)
- 61 ((uv or ultra-violet or ultraviolet) adj4 (photo\$1 or photograph\$ or image\$1 or imaging)).ti,ab. (1236)
- 62 ((lifestyle\$ or behavior\$ or behavior\$) adj3 (change\$ or changing or modification\$ or modify\$ or modifies)).ti,ab. (68212)
- 63 health behavior/ or attitude to health/ or harm reduction/ or health belief/ or high risk behavior/ (140654)
- 64 exp health personnel attitude/ (133391)
- 65 awareness/ (32778)
- 66 motivation/ (70209)
- 67 social desirability/ (3887)
- 68 doctor patient relation/ or nurse patient relation/ (111428)
- 69 patient attitude/ or patient compliance/ (142801)
- 70 (skinsafe\$ or sunsafe\$ or sunsmart\$ or sunwise\$ or pool cool or kidskin or kid skin or slipslopslap or slip slop slap or shunburn or shun burn).ti,ab. (100)
- 71 or/19-69 (1835926)
- 72 ((sun or suns or sunning or sunshine or sunlight\$ or sunbath\$ or suntan\$ or sunbed\$1 or sunlamp\$1 or sunscreen\$ or sunblock\$ or solarium\$1 or solaria\$ or uv or uva or uvb or uvc or ultraviolet or ultra-violet or tan or tans or tanning or tanned or spf) adj5 (risk\$ or benefit\$ or protect\$ or exposure\$ or safe\$) adj5 (knowledg\$ or attitude\$ or behavio\$ or value\$ or understand\$ or belief\$ or believe or perception\$ or perceive\$ or view or views or prefer\$ or intention\$ or habit\$1 or practice\$ or comply or complies or compliance or adhere\$1 or adherence or concordance or accordance or accept\$ or motivation\$1 or awareness\$ or uptake or up-take or takeup or take-up or barrier\$1 or facilitator\$1 or utilis\$ or utiliz\$)).ti,ab. (1954)
- 73 (18 and 71) or (72 or 70) (10578)
- 74 (animal experiment/ or animal model/ or nonhuman/) not human/ (3740023)
- 75 (editorial or letter or note).pt. (1928525)
- 76 case report/ (2026088)
- 77 case report.ti. (204600)
- 78 73 not (74 or 75 or 76 or 77) (9013)
- 79 limit 78 to (english language and yr="1994 -Current") (7668)

Database name	Cochrane Database of Systematic Reviews (CDSR)
Database host	Cochrane Library, Wiley
Database coverage dates	Issue 2 of 12 February 2014
Searcher	Hannah Wood
Search date	27/02/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	57
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	55 (2 records imported direct to Duplicates Library)
Reference numbers of records in EndNote library	9528-9582
Number of records after de-duplication in EndNote library	52

Search Name:

Date Run: 27/02/14 16:50:44.920

Description:

ID	Search	Hits
#1	[mh ^sunlight]	240
#2	[mh ^"ultraviolet rays"]	511
#3	[mh ^sunburn]	149
#4	[mh ^Sunbathing]	17
#5	[mh ^Suntan]	4
#6	[mh "Sunscreening agents"]	212
#7	[mh ^"Sun Protection Factor"]	6
#8	((sun or suns or sunning or sunshine or sunlight*) near/3 (damag* or protect* or safe or safety or risk* or benefit* or beneficial or index or indexes or exposure* or overexposure* or expose* or overexpose* or underexpose* or underexposure*)):ti,ab	510
#9	((uv or uva or uvb or uvc or ultra-violet or ultraviolet or solar) near/3 (ray* or radiation or irradiat* or damag* or protect* or safe or safety or risk* or benefit* or beneficial or index or indexes or exposure* or overexposure* or expose* or overexpose*)):ti,ab	952
#10	(sunscreen* or sun-screen* or sunblock* or sun-block* or spf or sunburn* or sun-burn* or photo-damag* or photodamag* or photoag* or photo-ag* or photo-expos* or photoexpos*):ti,ab	808
#11	(sunbath* or sun-bath* or suntan* or tan or tans or tanning or tanned or sunbed* or sun-bed* or sunlamp* or sun-lamp* or solarium* or solaria*):ti,ab	345
#12	MeSH descriptor: [Melanoma] this term only and with qualifier(s): [Prevention & control - PC, Psychology - PX]	81
#13	MeSH descriptor: [Vitamin D Deficiency] explode all trees and with qualifier(s): [Prevention & control - PC, Psychology - PX]	112
#14	MeSH descriptor: [Skin Neoplasms] explode all trees and with qualifier(s): [Prevention & control - PC, Psychology - PX]	261
#15	(vitaminD* or "vitamin D" or cholecalciferol* or colecalciferol* or ergocalciferol* or calciferol* or alfacalcidol*):ti	1460
#16	(osteomalacia or rickets or "hypovitaminosis D"):ti	88
#17	((skin or skins) near/3 (cancer* or neoplasm* or tumor* or tumour* or carcinoma* or malignan*)):ti	234
#18	(melanoma* or basal next cell next carcinoma* or squamous next cell next carcinoma*):ti	2701near.
#19	{or #1-#18}	6586
#20	#19 from 1994 to 2014, in Cochrane Reviews (Reviews and Protocols)	57

Database name	Database of Abstracts of Reviews of Effectiveness (DARE)
Database host	Cochrane Library, Wiley
Database coverage dates	Issue 1 of 4 January 2014
Searcher	Hannah Wood
Search date	28/02/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	320
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	319 (1 record imported direct to Duplicates Library)
Reference numbers of records in EndNote library	9583-9901
Number of records after de-duplication in EndNote library	280

Search Name:

Date Run: 28/02/14 11:25:09.420

Description:

ID	Search	Hits
#1	MeSH descriptor: [Sunlight] this term only	240
#2	MeSH descriptor: [Ultraviolet Rays] this term only	511
#3	MeSH descriptor: [Sunburn] this term only	149
#4	MeSH descriptor: [Sunbathing] this term only	17
#5	MeSH descriptor: [Suntan] this term only	4
#6	MeSH descriptor: [Sunscreening Agents] explode all trees	212
#7	MeSH descriptor: [Sun Protection Factor] this term only	6
#8	(sun or suns or sunning or sunshine or sunlight*) near/3 (damag* or protect* or safe or safety or risk* or benefit* or beneficial or index or indexes or exposure* or overexposure* or expose* or overexpose* or underexpose* or underexposure*)	643
#9	(uv or uva or uvb or uvc or ultra-violet or ultraviolet or solar) near/3 (ray* or radiation or irradiat* or damag* or protect* or safe or safety or risk* or benefit* or beneficial or index or indexes or exposure* or overexposure* or expose* or overexpose*)	1433
#10	sunscreen* or sun-screen* or sunblock* or sun-block* or spf or sunburn* or sun-burn* or photo-damag* or photodamag* or photoag* or photo-ag* or photo-expos* or photoexpos*	970
#11	sunbath* or sun-bath* or suntan* or tan or tans or tanning or tanned or sunbed* or sun-bed* or sunlamp* or sun-lamp* or solarium* or solaria*	3467
#12	MeSH descriptor: [Melanoma] this term only and with qualifier(s): [Prevention & control - PC]	54
#13	MeSH descriptor: [Melanoma] this term only and with qualifier(s): [Psychology - PX]	32
#14	MeSH descriptor: [Vitamin D Deficiency] explode all trees and with qualifier(s): [Prevention & control - PC]	110
#15	MeSH descriptor: [Vitamin D Deficiency] explode all trees and with qualifier(s): [Psychology - PX]	2
#16	MeSH descriptor: [Skin Neoplasms] explode all trees and with qualifier(s): [Prevention & control - PC]	243
#17	MeSH descriptor: [Skin Neoplasms] explode all trees and with qualifier(s): [Psychology - PX]	30
#18	(vitaminD* or "vitamin D" or cholecalciferol* or colecalciferol* or ergocalciferol* or calciferol* or alfacalcidol*):ti	1460
#19	(osteomalacia or rickets or "hypovitaminosis D"):ti	88
#20	((skin or skins) near/3 (cancer* or neoplasm* or tumor* or tumour* or carcinoma* or malignan*)):ti	234
#21	(melanoma* or basal next cell next carcinoma* or squamous next cell next carcinoma*):ti	2701
#22	{or #1-#21}	9970
#23	[mh ^"health communication"]	23
#24	[mh ^"persuasive communication"]	190

#25	[mh ^"communication barriers"]	76
#26	[mh ^communication]	1262
#27	[mh ^"health promotion"]	3328
#28	[mh ^"health education"]	2750
#29	[mh "consumer health information"]	125
#30	[mh ^"patient education as topic"]	6065
#31	[mh ^"communications media"]	17
#32	[mh "mass media"]	1398
#33	[mh ^pamphlets]	572
#34	[mh ^"electronic mail"]	168
#35	[mh "teaching materials"]	2710
#36	[mh "educational technology"]	2305
#37	[mh "programmed instruction"]	0
#38	[mh telephone]	1552
#39	[mh internet]	1525
#40	[mh ^telecommunications]	81
#41	[mh ^"electronic mail"]	168
#42	[mh marketing]	307
#43	[mh ^"information dissemination"]	157
#44	[mh ^"probability learning"]	42
#45	[mh ^"Primary Prevention"]	736
#46	[mh ^counseling]	2691
#47	[mh "directive counseling"]	275
#48	[mh ^"behavior therapy"]	3389
#49	[mh ^"cognitive therapy"]	4418
#50	[mh ^mentors]	107
#51	[mh ^"peer group"]	750
#52	Any MeSH descriptor with qualifier(s): [Education - ED] 4709	
#53	"health communication":so	127
#54	(risk* or probabilit* or uncertain* or message* or communicat* or marketing or advice or advise* or advising or appeal* or loss or gain or positive* or negative*) near/3 (frame or framed or framing)	175
#55	(risk* or probabilit* or uncertain*) near/3 (notif* or inform* or message* or communicat* or marketing or campaign* or publiciz* or publicis* or publicity or advice or advise* or advising or perceive* or perception*)	3504
#56	(tailor* or personal* or individual* or targeted or targeting) near/3 (message* or material* or communica* or feedback or feed-back or promot* or market* or campaign*)	2717
#57	(cognitive or cognition or associative or affective or positiv* or negativ*) near/3 message*	53
#58	decision next aid* or decision next tool* or decision next support*	2398
#59	(shared or informed) near/3 (decision* or choice*)	1499
#60	(health* or health-care or lifestyle* or life-style* or consumer*) near/2 (information or message* or communicat*)	2471
#61	education* near/2 (program* or intervention* or meeting* or session* or strateg* or workshop* or visit* or material*)	8694
#62	behavio*r* near/2 intervention*	3248
#63	outreach or "out reach"	1018
#64	(family or families or parent* or care-giver* or caregiver* or carer or carers or guardian* or wife or wives or husband or husbands or spouse* or spousal or partner or partners or mother* or father* or teacher*) near/3 (led or educat* or train* or teach or teaches or teaching or taught or involv* or intervention* or program* or session*)	8086
#65	work-based or workplace-based or worksite-based or community-led or community-based or community-wide or community-centred or community-centered or community-run or community next intervention* or community next program* or community next scheme* or faith-based or faith-led or church-based or church-led	4931
#66	(work or workplace* or work-place* or employer* or school* or playschool* or preschool* or nursery or nurseries or kindergarten* or creche* or highschool* or afterschool) near/3 (led or educat* or train* or teach* or involv* or intervention* or program* or session*)	10170

#67	(health* next worker* or health-care next worker* or health* next professional* or health-care next professional* or health* next personnel or health-care next personnel or general-practitioner* or gp or gps or nurse* or health next visitor* or midwife or midwives or clinician* or pharmacist* or "primary care" or "general practice" or family next doctor* or family next practi* or dermatologist* or nutritionist*) near/3 (led or educat* or train* or teach* or involv* or intervention* or program* or session*)	7933
#68	(brief or opportunist* or concise or short or direct or lifestyle or written or oral or verbal or personali*ed or individual*ed or motivational) near/2 (advice or negotiation* or guidance or discussion* or encouragement or intervention* or program* or meeting* or session* or interview*)	8149
#69	(community or consumer or pressure) next (group* or organi*ation*)	440
#70	coach* or mentor* or counsel* or champion* or self-study or self-guided	12066
#71	(opinion or education* or influential) near/2 leader*	215
#72	(group or peer) near/2 (educat* or support*)	4057
#73	pictogram* or picto-gram* or pictograph* or picto-graph* or infogram* or info-gram* or infographic* or info-graphic*	52
#74	((graphic* or visual* or pictorial or illustra* or print*) near/3 (image* or stimuli or display* or dissemin* or present or presented or presentation* or communicat* or message* or advice or feedback or feed-back or inform or information or aid or aids or representation* or material*)):ti	398
#75	((data or statistic* or graph or graphs or numeric* or verbal or textual or written) near/3 (stimuli or display* or dissemin* or presented or presentation* or communicat* or message* or advice or feedback or feed back or inform or information or aid or aids or representation* or material*)):ti	254
#76	(story or stories or narrative* or testimon* or "first person") not (narrative next review*)	7760
#77	mass next media* or new next media* or national next media* or local next media* or regional next media* or social next media* or social next network* or marketing or marketed or television* or tele-vision* or tv or advert* or billboard* or bill-board* or poster* or cinema* or video* or newspaper* or news or magazine* or journalis* or comic* or cartoon* or leaflet* or pamphlet* or booklet* or workbook* or work-book* or handbook* or hand-book* or radio or radios or internet or multimedia or multi-media or web or website* or interactive or inter-active or facebook or twitter or youtube or you-tube or mail* next out* or mailout* or mail-shot* or mailshot* or flyer*	44109
#78	phone* or telephone* or smartphone* or email* or e-mail or electronic next mail* or text next messag* or texting or sms or short next messag* or app or apps or android* or blackberr* or iphone* or ipad* or ehealth or e-health or mhealth or m-health or telehealth* or tele-health*	63436
#79	media* near/3 (coverage or report* or article* or content* or present* or discuss* or messag* or campaign*)	3144
#80	appearance near/3 (based or focused or orientated)	70
#81	(uv or ultra-violet or ultraviolet) near/4 (photo* or photograph* or image* or imaging)	302
#82	(lifestyle* or behavior* or behaviour*) near/3 (change* or changing or modification* or modify* or modifies)	7043
#83	[mh ^"attitude of health personnel"]	1304
#84	[mh "attitude to health"]	22747
#85	[mh ^awareness]	671
#86	[mh ^"risk reduction behavior"]	918
#87	[mh ^risk-taking]	839
#88	[mh ^motivation]	2793
#89	[mh ^intention]	354
#90	[mh ^"social desirability"]	166
#91	[mh "professional-patient relations"]	1841
#92	[mh "professional role"]	576
#93	{or #23-#92}	162913
#94	#22 and #93	2529
#95	skinsafe* or sunsafe* or sunsmart* or sunwise* or "pool cool" or kidskin or "kid skin" or slipslopslap or "slip slop slap" or shunburn or "shun burn"	24

#96 (sun or suns or sunning or sunshine or sunlight* or sunbath* or suntan* or sunbed* or sunlamp* or sunscreen* or sunblock* or solarium* or solaria* or uv or uva or uvb or uvc or ultraviolet or ultra-violet or tan or tans or tanning or tanned or spf) near/5 (risk* or benefit* or protect* or exposure* or safe*) near/5 (knowledg* or attitude* or behavio* or value* or understand* or belief* or believe or perception* or perceive* or view or views or prefer* or intention* or habit* or practice* or comply or complies or compliance or adhere* or adherence or concordance or accordance or accept* or motivation* or awareness* or uptake or up-take or takeup or take-up or barrier* or facilitator* or utilis* or utiliz*) 175

#97 #95 or #96 181

#98 #97 or #94 2559

#99 #98 from 1994 to 2014, in Other Reviews 320

Database name	NHS Economic Evaluation Database (NHS EED)
Database host	Cochrane Library, Wiley
Database coverage dates	Issue 1 of 4 January 2014
Searcher	Hannah Wood
Search date	28/02/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	95
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	95
Reference numbers of records in EndNote library	9902-9996
Number of records after de-duplication in EndNote library	84

Search Name:

Date Run: 28/02/14 11:25:09.420

Description:

ID	Search	Hits
#1	MeSH descriptor: [Sunlight] this term only	240
#2	MeSH descriptor: [Ultraviolet Rays] this term only	511
#3	MeSH descriptor: [Sunburn] this term only	149
#4	MeSH descriptor: [Sunbathing] this term only	17
#5	MeSH descriptor: [Suntan] this term only	4
#6	MeSH descriptor: [Sunscreening Agents] explode all trees	212
#7	MeSH descriptor: [Sun Protection Factor] this term only	6
#8	(sun or suns or sunning or sunshine or sunlight*) near/3 (damag* or protect* or safe or safety or risk* or benefit* or beneficial or index or indexes or exposure* or overexposure* or expose* or overexpose* or underexpose* or underexposure*)	643
#9	(uv or uva or uvb or uvc or ultra-violet or ultraviolet or solar) near/3 (ray* or radiation or irradiat* or damag* or protect* or safe or safety or risk* or benefit* or beneficial or index or indexes or exposure* or overexposure* or expose* or overexpose*)	1433
#10	sunscreen* or sun-screen* or sunblock* or sun-block* or spf or sunburn* or sun-burn* or photo-damag* or photodamag* or photoag* or photo-ag* or photo-expos* or photoexpos*	970
#11	sunbath* or sun-bath* or suntan* or tan or tans or tanning or tanned or sunbed* or sun-bed* or sunlamp* or sun-lamp* or solarium* or solaria*	3467
#12	MeSH descriptor: [Melanoma] this term only and with qualifier(s): [Prevention & control - PC]	54
#13	MeSH descriptor: [Melanoma] this term only and with qualifier(s): [Psychology - PX]	32
#14	MeSH descriptor: [Vitamin D Deficiency] explode all trees and with qualifier(s): [Prevention & control - PC]	110
#15	MeSH descriptor: [Vitamin D Deficiency] explode all trees and with qualifier(s): [Psychology - PX]	2
#16	MeSH descriptor: [Skin Neoplasms] explode all trees and with qualifier(s): [Prevention & control - PC]	243

#17	MeSH descriptor: [Skin Neoplasms] explode all trees and with qualifier(s): [Psychology - PX]	
	30	
#18	(vitaminD* or "vitamin D" or cholecalciferol* or colecalciferol* or ergocalciferol* or calciferol* or alfalcidol*):ti	1460
#19	(osteomalacia or rickets or "hypovitaminosis D"):ti	88
#20	((skin or skins) near/3 (cancer* or neoplasm* or tumor* or tumour* or carcinoma* or malignan*)):ti	234
#21	(melanoma* or basal next cell next carcinoma* or squamous next cell next carcinoma*):ti	2701
#22	{or #1-#21}	9970
#23	[mh ^"health communication"]	23
#24	[mh ^"persuasive communication"]	190
#25	[mh ^"communication barriers"]	76
#26	[mh ^communication]	1262
#27	[mh ^"health promotion"]	3328
#28	[mh ^"health education"]	2750
#29	[mh "consumer health information"]	125
#30	[mh ^"patient education as topic"]	6065
#31	[mh ^"communications media"]	17
#32	[mh "mass media"]	1398
#33	[mh ^pamphlets]	572
#34	[mh ^"electronic mail"]	168
#35	[mh "teaching materials"]	2710
#36	[mh "educational technology"]	2305
#37	[mh "programmed instruction"]	0
#38	[mh telephone]	1552
#39	[mh internet]	1525
#40	[mh ^telecommunications]	81
#41	[mh ^"electronic mail"]	168
#42	[mh marketing]	307
#43	[mh ^"information dissemination"]	157
#44	[mh ^"probability learning"]	42
#45	[mh ^"Primary Prevention"]	736
#46	[mh ^counseling]	2691
#47	[mh "directive counseling"]	275
#48	[mh ^"behavior therapy"]	3389
#49	[mh ^"cognitive therapy"]	4418
#50	[mh ^mentors]	107
#51	[mh ^"peer group"]	750
#52	Any MeSH descriptor with qualifier(s): [Education - ED]	4709
#53	"health communication":so	127
#54	(risk* or probabilit* or uncertain* or message* or communicat* or marketing or advice or advise* or advising or appeal* or loss or gain or positive* or negative*) near/3 (frame or framed or framing)	175
#55	(risk* or probabilit* or uncertain*) near/3 (notif* or inform* or message* or communicat* or marketing or campaign* or publiciz* or publicis* or publicity or advice or advise* or advising or perceive* or perception*)	3504
#56	(tailor* or personal* or individual* or targeted or targeting) near/3 (message* or material* or communica* or feedback or feed-back or promot* or market* or campaign*)	2717
#57	(cognitive or cognition or associative or affective or positiv* or negativ*) near/3 message*	53
#58	decision next aid* or decision next tool* or decision next support*	2398
#59	(shared or informed) near/3 (decision* or choice*)	1499
#60	(health* or health-care or lifestyle* or life-style* or consumer*) near/2 (information or message* or communicat*)	2471
#61	education* near/2 (program* or intervention* or meeting* or session* or strateg* or workshop* or visit* or material*)	8694
#62	behavio*r* near/2 intervention*	3248
#63	outreach or "out reach"	1018

#64	(family or families or parent* or care-giver* or caregiver* or carer or carers or guardian* or wife or wives or husband or husbands or spouse* or spousal or partner or partners or mother* or father* or teacher*) near/3 (led or educat* or train* or teach or teaches or teaching or taught or involv* or intervention* or program* or session*)	8086
#65	work-based or workplace-based or worksite-based or community-led or community-based or community-wide or community-centred or community-centered or community-run or community next intervention* or community next program* or community next scheme* or faith-based or faith-led or church-based or church-led	4931
#66	(work or workplace* or work-place* or employer* or school* or playschool* or preschool* or nursery or nurseries or kindergarten* or creche* or highschool* or afterschool) near/3 (led or educat* or train* or teach* or involv* or intervention* or program* or session*)	10170
#67	(health* next worker* or health-care next worker* or health* next professional* or health-care next professional* or health* next personnel or health-care next personnel or general-practitioner* or gp or gps or nurse* or health next visitor* or midwife or midwives or clinician* or pharmacist* or "primary care" or "general practice" or family next doctor* or family next practi* or dermatologist* or nutritionist*) near/3 (led or educat* or train* or teach* or involv* or intervention* or program* or session*)	7933
#68	(brief or opportunist* or concise or short or direct or lifestyle or written or oral or verbal or personali*ed or individual*ed or motivational) near/2 (advice or negotiation* or guidance or discussion* or encouragement or intervention* or program* or meeting* or session* or interview*)	8149
#69	(community or consumer or pressure) next (group* or organi*ation*)	440
#70	coach* or mentor* or counsel* or champion* or self-study or self-guided	12066
#71	(opinion or education* or influential) near/2 leader*	215
#72	(group or peer) near/2 (educat* or support*)	4057
#73	pictogram* or picto-gram* or pictograph* or picto-graph* or infogram* or info-gram* or infographic* or info-graphic*	52
#74	((graphic* or visual* or pictorial or illustra* or print*) near/3 (image* or stimuli or display* or dissemin* or present or presented or presentation* or communicat* or message* or advice or feedback or feed-back or inform or information or aid or aids or representation* or material*)):ti	398
#75	((data or statistic* or graph or graphs or numeric* or verbal or textual or written) near/3 (stimuli or display* or dissemin* or presented or presentation* or communicat* or message* or advice or feedback or feed back or inform or information or aid or aids or representation* or material*)):ti	254
#76	(story or stories or narrative* or testimon* or "first person") not (narrative next review*)	7760
#77	mass next media* or new next media* or national next media* or local next media* or regional next media* or social next media* or social next network* or marketing or marketed or television* or tele-vision* or tv or advert* or billboard* or bill-board* or poster* or cinema* or video* or newspaper* or news or magazine* or journalis* or comic* or cartoon* or leaflet* or pamphlet* or booklet* or workbook* or work-book* or handbook* or hand-book* or radio or radios or internet or multimedia or multi-media or web or website* or interactive or inter-active or facebook or twitter or youtube or you-tube or mail* next out* or mailout* or mail-shot* or mailshot* or flyer*	44109
#78	phone* or telephone* or smartphone* or email* or e-mail or electronic next mail* or text next messag* or texting or sms or short next messag* or app or apps or android* or blackberr* or iphone* or ipad* or ehealth or e-health or mhealth or m-health or telehealth* or tele-health*	63436
#79	media* near/3 (coverage or report* or article* or content* or present* or discuss* or messag* or campaign*)	3144
#80	appearance near/3 (based or focused or orientated)	70
#81	(uv or ultra-violet or ultraviolet) near/4 (photo* or photograph* or image* or imaging)	302
#82	(lifestyle* or behavior* or behaviour*) near/3 (change* or changing or modification* or modify* or modifies)	7043
#83	[mh ^"attitude of health personnel"]	1304
#84	[mh "attitude to health"]	22747
#85	[mh ^awareness]	671
#86	[mh ^"risk reduction behavior"]	918
#87	[mh ^risk-taking]	839
#88	[mh ^motivation]	2793
#89	[mh ^intention]	354

#90 [mh ^"social desirability"] 166
 #91 [mh "professional-patient relations"] 1841
 #92 [mh "professional role"] 576
 #93 {or #23-#92} 162913
 #94 #22 and #93 2529
 #95 skinsafe* or sunsafe* or sunsmart* or sunwise* or "pool cool" or kidskin or "kid skin" or
 slipslopslap or "slip slop slap" or shunburn or "shun burn" 24
 #96 (sun or suns or sunning or sunshine or sunlight* or sunbath* or suntan* or sunbed* or
 sunlamp* or sunscreen* or sunblock* or solarium* or solaria* or uv or uva or uvb or uvc or
 ultraviolet or ultra-violet or tan or tans or tanning or tanned or spf) near/5 (risk* or benefit* or
 protect* or exposure* or safe*) near/5 (knowledg* or attitude* or behavio* or value* or
 understand* or belief* or believe or perception* or perceive* or view or views or prefer* or
 intention* or habit* or practice* or comply or complies or compliance or adhere* or
 adherence or concordance or accordance or accept* or motivation* or awareness* or uptake
 or up-take or takeup or take-up or barrier* or facilitator* or utilis* or utiliz*) 175
 #97 #95 or #96 181
 #98 #97 or #94 2559
 #99 #98 from 1994 to 2014, in Economic Evaluations 95

Database name	Cochrane Central Register of Controlled Trials (CENTRAL)
Database host	Cochrane Library, Wiley
Database coverage dates	Issue 1 of 12 January 2014
Searcher	Hannah Wood
Search date	28/02/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	1471
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	1091 (380 direct to duplicate Library)
Reference numbers of records in EndNote library	10322 - 11412
Number of records after de-duplication in EndNote library	954

Search Name:

Date Run: 28/02/14 11:25:09.420

Description:

ID	Search	Hits
#1	MeSH descriptor: [Sunlight] this term only	240
#2	MeSH descriptor: [Ultraviolet Rays] this term only	511
#3	MeSH descriptor: [Sunburn] this term only	149
#4	MeSH descriptor: [Sunbathing] this term only	17
#5	MeSH descriptor: [Suntan] this term only	4
#6	MeSH descriptor: [Sunscreening Agents] explode all trees	212
#7	MeSH descriptor: [Sun Protection Factor] this term only	6
#8	(sun or suns or sunning or sunshine or sunlight*) near/3 (damag* or protect* or safe or safety or risk* or benefit* or beneficial or index or indexes or exposure* or overexposure* or expose* or overexpose* or underexpose* or underexposure*)	643
#9	(uv or uva or uvb or uvc or ultra-violet or ultraviolet or solar) near/3 (ray* or radiation or irradiat* or damag* or protect* or safe or safety or risk* or benefit* or beneficial or index or indexes or exposure* or overexposure* or expose* or overexpose*)	1433
#10	sunscreen* or sun-screen* or sunblock* or sun-block* or spf or sunburn* or sun-burn* or photo-damag* or photodamag* or photoag* or photo-ag* or photo-expos* or photoexpos*	970
#11	sunbath* or sun-bath* or suntan* or tan or tans or tanning or tanned or sunbed* or sun-bed* or sunlamp* or sun-lamp* or solarium* or solaria*	3467
#12	MeSH descriptor: [Melanoma] this term only and with qualifier(s): [Prevention & control - PC]	54
#13	MeSH descriptor: [Melanoma] this term only and with qualifier(s): [Psychology - PX]	32

#14	MeSH descriptor: [Vitamin D Deficiency] explode all trees and with qualifier(s): [Prevention & control - PC]	110
#15	MeSH descriptor: [Vitamin D Deficiency] explode all trees and with qualifier(s): [Psychology - PX]	2
#16	MeSH descriptor: [Skin Neoplasms] explode all trees and with qualifier(s): [Prevention & control - PC]	243
#17	MeSH descriptor: [Skin Neoplasms] explode all trees and with qualifier(s): [Psychology - PX]	30
#18	(vitaminD* or "vitamin D" or cholecalciferol* or colecalciferol* or ergocalciferol* or calciferol* or alfalcidol*):ti	1460
#19	(osteomalacia or rickets or "hypovitaminosis D"):ti	88
#20	((skin or skins) near/3 (cancer* or neoplasm* or tumor* or tumour* or carcinoma* or malignan*)):ti	234
#21	(melanoma* or basal next cell next carcinoma* or squamous next cell next carcinoma*):ti	2701
#22	{or #1-#21}	9970
#23	[mh ^"health communication"]	23
#24	[mh ^"persuasive communication"]	190
#25	[mh ^"communication barriers"]	76
#26	[mh ^communication]	1262
#27	[mh ^"health promotion"]	3328
#28	[mh ^"health education"]	2750
#29	[mh "consumer health information"]	125
#30	[mh ^"patient education as topic"]	6065
#31	[mh ^"communications media"]	17
#32	[mh "mass media"]	1398
#33	[mh ^pamphlets]	572
#34	[mh ^"electronic mail"]	168
#35	[mh "teaching materials"]	2710
#36	[mh "educational technology"]	2305
#37	[mh "programmed instruction"]	0
#38	[mh telephone]	1552
#39	[mh internet]	1525
#40	[mh ^telecommunications]	81
#41	[mh ^"electronic mail"]	168
#42	[mh marketing]	307
#43	[mh ^"information dissemination"]	157
#44	[mh ^"probability learning"]	42
#45	[mh ^"Primary Prevention"]	736
#46	[mh ^counseling]	2691
#47	[mh "directive counseling"]	275
#48	[mh ^"behavior therapy"]	3389
#49	[mh ^"cognitive therapy"]	4418
#50	[mh ^mentors]	107
#51	[mh ^"peer group"]	750
#52	Any MeSH descriptor with qualifier(s): [Education - ED]	4709
#53	"health communication":so	127
#54	(risk* or probabilit* or uncertain* or message* or communicat* or marketing or advice or advise* or advising or appeal* or loss or gain or positive* or negative*) near/3 (frame or framed or framing)	175
#55	(risk* or probabilit* or uncertain*) near/3 (notif* or inform* or message* or communicat* or marketing or campaign* or publiciz* or publicis* or publicity or advice or advise* or advising or perceive* or perception*)	3504
#56	(tailor* or personal* or individual* or targeted or targeting) near/3 (message* or material* or communica* or feedback or feed-back or promot* or market* or campaign*)	2717
#57	(cognitive or cognition or associative or affective or positiv* or negativ*) near/3 message*	53
#58	decision next aid* or decision next tool* or decision next support*	2398
#59	(shared or informed) near/3 (decision* or choice*)	1499
#60	(health* or health-care or lifestyle* or life-style* or consumer*) near/2 (information or message* or communicat*)	2471

#61	education* near/2 (program* or intervention* or meeting* or session* or strateg* or workshop* or visit* or material*)	8694	
#62	behavio*r* near/2 intervention*	3248	
#63	outreach or "out reach"	1018	
#64	(family or families or parent* or care-giver* or caregiver* or carer or carers or guardian* or wife or wives or husband or husbands or spouse* or spousal or partner or partners or mother* or father* or teacher*) near/3 (led or educat* or train* or teach or teaches or teaching or taught or involv* or intervention* or program* or session*)	8086	
#65	work-based or workplace-based or worksite-based or community-led or community-based or community-wide or community-centred or community-centered or community-run or community next intervention* or community next program* or community next scheme* or faith-based or faith-led or church-based or church-led	4931	
#66	(work or workplace* or work-place* or employer* or school* or playschool* or preschool* or nursery or nurseries or kindergarten* or creche* or highschool* or afterschool) near/3 (led or educat* or train* or teach* or involv* or intervention* or program* or session*)	10170	
#67	(health* next worker* or health-care next worker* or health* next professional* or health-care next professional* or health* next personnel or health-care next personnel or general-practitioner* or gp or gps or nurse* or health next visitor* or midwife or midwives or clinician* or pharmacist* or "primary care" or "general practice" or family next doctor* or family next practi* or dermatologist* or nutritionist*) near/3 (led or educat* or train* or teach* or involv* or intervention* or program* or session*)	7933	
#68	(brief or opportunist* or concise or short or direct or lifestyle or written or oral or verbal or personali*ed or individuali*ed or motivational) near/2 (advice or negotiation* or guidance or discussion* or encouragement or intervention* or program* or meeting* or session* or interview*)	8149	
#69	(community or consumer or pressure) next (group* or organi*ation*)	440	
#70	coach* or mentor* or counsel* or champion* or self-study or self-guided		12066
#71	(opinion or education* or influential) near/2 leader*	215	
#72	(group or peer) near/2 (educat* or support*)	4057	
#73	pictogram* or picto-gram* or pictograph* or picto-graph* or infogram* or info-gram* or infographic* or info-graphic*	52	
#74	((graphic* or visual* or pictorial or illustra* or print*) near/3 (image* or stimuli or display* or dissemin* or present or presented or presentation* or communicat* or message* or advice or feedback or feed-back or inform or information or aid or aids or representation* or material*)):ti	398	
#75	((data or statistic* or graph or graphs or numeric* or verbal or textual or written) near/3 (stimuli or display* or dissemin* or presented or presentation* or communicat* or message* or advice or feedback or feed back or inform or information or aid or aids or representation* or material*)):ti	254	
#76	(story or stories or narrative* or testimon* or "first person") not (narrative next review*)	7760	
#77	mass next media* or new next media* or national next media* or local next media* or regional next media* or social next media* or social next network* or marketing or marketed or television* or tele-vision* or tv or advert* or billboard* or bill-board* or poster* or cinema* or video* or newspaper* or news or magazine* or journalis* or comic* or cartoon* or leaflet* or pamphlet* or booklet* or workbook* or work-book* or handbook* or hand-book* or radio or radios or internet or multimedia or multi-media or web or website* or interactive or inter-active or facebook or twitter or youtube or you-tube or mail* next out* or mailout* or mail-shot* or mailshot* or flyer*	44109	
#78	phone* or telephone* or smartphone* or email* or e-mail or electronic next mail* or text next messag* or texting or sms or short next messag* or app or apps or android* or blackberr* or iphone* or ipad* or ehealth or e-health or mhealth or m-health or telehealth* or tele-health*	63436	
#79	media* near/3 (coverage or report* or article* or content* or present* or discuss* or messag* or campaign*)	3144	
#80	appearance near/3 (based or focused or orientated)	70	
#81	(uv or ultra-violet or ultraviolet) near/4 (photo* or photograph* or image* or imaging)	302	
#82	(lifestyle* or behavior* or behaviour*) near/3 (change* or changing or modification* or modify* or modifies)	7043	
#83	[mh ^"attitude of health personnel"]	1304	
#84	[mh "attitude to health"]	22747	
#85	[mh ^awareness]	671	

#86	[mh ^"risk reduction behavior"]	918	
#87	[mh ^risk-taking]	839	
#88	[mh ^motivation]	2793	
#89	[mh ^intention]	354	
#90	[mh ^"social desirability"]	166	
#91	[mh "professional-patient relations"]	1841	
#92	[mh "professional role"]	576	
#93	{or #23-#92}	162913	
#94	#22 and #93	2529	
#95	skinsafe* or sunsafe* or sunsmart* or sunwise* or "pool cool" or kidskin or "kid skin" or slipslopslap or "slip slop slap" or shunburn or "shun burn"	24	
#96	(sun or suns or sunning or sunshine or sunlight* or sunbath* or suntan* or sunbed* or sunlamp* or sunscreen* or sunblock* or solarium* or solaria* or uv or uva or uvb or uvc or ultraviolet or ultra-violet or tan or tans or tanning or tanned or spf) near/5 (risk* or benefit* or protect* or exposure* or safe*) near/5 (knowledg* or attitude* or behavio* or value* or understand* or belief* or believe or perception* or perceive* or view or views or prefer* or intention* or habit* or practice* or comply or complies or compliance or adhere* or adherence or concordance or accordance or accept* or motivation* or awareness* or uptake or up-take or takeup or take-up or barrier* or facilitator* or utilis* or utiliz*)	175	
#97	#95 or #96	181	
#98	#97 or #94	2559	
#99	#98 from 1994 to 2014, in Trials	1471	

Database name	EconLit
Database host	Ovid SP
Database coverage dates	1886 – January 2014
Searcher	Hannah Wood
Search date	28/02/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	33
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	32 (1 direct to duplicate Library)
Reference numbers of records in EndNote library	9997-10028
Number of records after de-duplication in EndNote library	32

Database: Econlit <1886 to January 2014>

Search Strategy:

- 1 ((sun or suns or sunning or sunshine or sunlight\$) adj3 (damag\$ or protect\$ or safe or safety or risk\$ or benefit\$1 or beneficial or index or indexes or exposure\$1 or overexposure\$1 or expose\$1 or overexpose\$1 or underexpose\$1 or underexposure\$1)).ti,ab. (11)
- 2 ((uv or uva or uvb or uvc or ultra-violet or ultraviolet or solar) adj3 (ray\$1 or radiation or irradiat\$ or damag\$ or protect\$ or safe or safety or risk\$ or benefit\$1 or beneficial or index or indexes or exposure\$1 or overexposure\$1 or expose\$1 or overexpose\$1)).ti,ab. (73)
- 3 (sunscreen\$ or sun-screen\$ or sunblock\$ or sun-block\$ or spf or sunburn\$ or sun-burn\$ or photo-damag\$ or photodamag\$ or photoag\$ or photo-ag\$ or photo-expos\$ or photoexpos\$).ti,ab. (69)
- 4 (sunbath\$ or sun-bath\$ or suntan\$ or tan or tans or tanning or tanned or sunbed\$1 or sunbed\$ or sunlamp\$1 or sun-lamp\$ or solarium\$1 or solaria\$).ti,ab. (137)
- 5 (vitaminD\$1 or vitamin D or cholecalciferol\$ or colecalciferol\$ or ergocalciferol\$ or calciferol\$ or alfacalcidol\$).ti,ab. (20)
- 6 (osteomalacia or rickets or hypovitaminosis D).ti,ab. (3)
- 7 ((skin or skins) adj3 (cancer\$ or neoplasm\$ or tumor\$ or tumour\$ or carcinoma\$ or malignan\$)).ti,ab. (19)
- 8 (melanoma\$ or basal cell carcinoma\$ or squamous cell carcinoma\$).ti,ab. (12)

- 9 ((risk\$ or probabilit\$ or uncertain\$ or message\$1 or communicat\$ or marketing or advice or advise\$ or advising or appeal\$1 or loss or gain or positive\$ or negative\$) adj3 (frame or framed or framing)).ti,ab. (193)
- 10 ((risk\$ or probabilit\$ or uncertain\$) adj3 (notif\$ or inform\$ or message\$1 or communicat\$ or marketing or campaign\$ or publiciz\$ or publicis\$ or publicity or advice or advise\$ or advising or perceive\$ or perception\$)).ti,ab. (3854)
- 11 ((tailor\$ or personal\$ or individual\$ or targeted or targeting) adj3 (message\$1 or material\$1 or communica\$ or feedback or feed back or promot\$ or market\$ or campaign\$)).ti,ab. (2003)
- 12 ((cognitive or cognition or associative or affective or positiv\$ or negativ\$) adj3 message\$1).ti,ab. (30)
- 13 (decision aid\$1 or decision tool\$1 or decision support\$).ti,ab. (1067)
- 14 ((shared or informed) adj3 (decision\$1 or choice\$1)).ti,ab. (404)
- 15 ((health\$ or health care or lifestyle\$ or life style\$1 or consumer\$1) adj2 (information or message\$1 or communicat\$)).ti,ab. (1076)
- 16 (education\$ adj2 (program\$ or intervention\$1 or meeting\$1 or session\$1 or strateg\$ or workshop\$1 or visit\$ or material\$1)).ti,ab. (956)
- 17 (behavio?r\$ adj2 intervention\$).ti,ab. (57)
- 18 (outreach or out reach).ti,ab. (429)
- 19 ((family or families or parent\$ or care-giver\$ or caregiver\$ or carer or carers or guardian\$ or wife or wives or husband or husbands or spouse\$1 or spousal or partner or partners or mother\$ or father\$ or teacher\$1) adj3 (led or educat\$ or train\$ or teach or teaches or teaching or taught or invol\$ or intervention\$ or program\$ or session\$1)).ti,ab. (3301)
- 20 (work-based or workplace-based or worksite-based or community-led or community-based or community-wide or community-centred or community-centered or community-run or community intervention\$ or community program\$ or community scheme\$ or faith-based or faith-led or church-based or church-led).ti,ab. (1490)
- 21 ((work or workplace\$ or work place\$ or employer\$ or school\$ or playschool\$ or preschool\$ or nursery or nurseries or kindergarten\$ or creche\$ or highschool\$ or afterschool) adj3 (led or educat\$ or train\$ or teach\$ or invol\$ or intervention\$ or program\$ or session\$1)).ti,ab. (4752)
- 22 ((health\$ worker\$ or health-care worker\$ or health\$ professional\$ or health-care professional\$ or health\$ personnel or health-care personnel or general-practitioner\$ or gp or gps or nurse\$1 or health visitor\$1 or midwife or midwives or clinician\$1 or pharmacist\$ or primary care or general practice or family doctor\$1 or family practi\$ or dermatologist\$1 or nutritionist\$1) adj3 (led or educat\$ or train\$ or teach\$ or invol\$ or intervention\$ or program\$ or session\$1)).ti,ab. (167)
- 23 ((brief or opportunist\$ or concise or short or direct or lifestyle or written or oral or verbal or personali?ed or individuali?ed or motivational) adj2 (advice or negotiation\$ or guidance or discussion\$ or encouragement or intervention\$ or program\$ or meeting\$ or session\$ or interview\$)).ti,ab. (909)
- 24 ((community or consumer or pressure) adj (group\$1 or organi?ation\$1)).ti,ab. (678)
- 25 (coach\$ or mentor\$ or counsel\$ or champion\$ or self-study or self-guided).ti,ab. (1962)
- 26 ((opinion or education\$ or influential) adj1 leader\$).ti,ab. (132)
- 27 ((group or peer) adj2 (educat\$ or support\$)).ti,ab. (237)
- 28 (pictogram\$ or picto-gram\$ or pictograph\$ or picto-graph\$ or infogram\$ or info-gram\$ or infographic\$ or info-graphic\$).ti,ab. (7)
- 29 ((graphic\$ or visual\$ or pictorial or illustra\$ or print\$) adj3 (image\$1 or stimuli or display\$ or dissemin\$ or present or presented or presentation\$1 or communicat\$ or message\$1 or advice or feedback or feed back or inform or information or aid or aids or representation\$1 or material\$1)).ti,ab. (1203)
- 30 ((data or statistic\$ or graph or graphs or numeric\$ or verbal or textual or written) adj3 (stimuli or display\$1 or dissemin\$ or presented or presentation\$1 or communicat\$ or message\$1 or advice or feedback or feed back or inform or information or aid or aids or representation\$1 or material\$1)).ti,ab. (3936)
- 31 ((story or stories or narrative\$1 or testimon\$ or first person) not narrative review\$1).ti,ab. (5179)

- 32 (mass media\$ or new media\$ or national media\$ or local media\$ or regional media\$ or social media\$ or social network\$ or marketing or marketed or television\$1 or tele-vision\$1 or tv or advert\$ or billboard\$1 or bill-board\$1 or poster\$1 or cinema\$ or video\$1 or newspaper\$1 or news or magazine\$1 or journalis\$ or comic\$1 or cartoon\$1 or leaflet\$1 or pamphlet\$1 or booklet\$1 or workbook\$1 or work-book\$1 or handbook\$1 or hand-book\$1 or radio or radios or internet or multimedia or multi-media or web or website\$ or interactive or inter-active or facebook or twitter or youtube or you-tube or mail\$ out\$1 or mailout\$1 or mail-shot\$1 or mailshot\$1 or flyer\$1).ti,ab. (34933)
- 33 (phone\$1 or telephone\$1 or smartphone\$1 or email\$1 or e mail or electronic mail\$1 or text messag\$ or texting or sms or short messag\$ or app or apps or android\$ or blackberr\$ or iphone\$1 or ipad\$1 or ehealth or e health or mhealth or m health or telehealth\$ or tele-health\$).ti,ab. (2815)
- 34 (media\$1 adj3 (coverage or report\$ or article\$ or content\$ or present\$ or discuss\$ or messag\$ or campaign\$)).ti,ab. (638)
- 35 (appearance adj3 (based or focused or orientated)).ti,ab. (20)
- 36 ((uv or ultra-violet or ultraviolet) adj4 (photo\$1 or photograph\$ or image\$1 or imaging)).ti,ab. (0)
- 37 ((lifestyle\$ or behavior\$ or behaviour\$) adj3 (change\$ or changing or modification\$ or modify\$ or modifies)).ti,ab. (2192)
- 38 (skinsafe\$ or sunsafe\$ or sunsmart\$ or sunwise\$ or pool cool or kidskin or kid skin or slipslopslap or slip slop slap or shunburn or shun burn).ti,ab. (0)
- 39 ((sun or suns or sunning or sunshine or sunlight\$ or sunbath\$ or suntan\$ or sunbed\$1 or sunlamp\$1 or sunscreen\$ or sunblock\$ or solarium\$1 or solaria\$ or uv or uva or uvb or uvc or ultraviolet or ultra-violet or tan or tans or tanning or tanned or spf) adj5 (risk\$ or benefit\$ or protect\$ or exposure\$ or safe\$) adj5 (knowledg\$ or attitude\$ or behavio\$ or value\$ or understand\$ or belief\$ or believe or perception\$ or perceive\$ or view or views or prefer\$ or intention\$ or habit\$1 or practice\$ or comply or complies or compliance or adhere\$1 or adherence or concordance or accordance or accept\$ or motivation\$1 or awareness\$ or uptake or up-take or takeup or take-up or barrier\$1 or facilitator\$1 or utilis\$ or utiliz\$)).ti,ab. (2)
- 40 or/1-8 (324)
- 41 or/9-37 (68756)
- 42 40 and 41 (34)
- 43 38 or 39 (2)
- 44 42 or 43 (36)
- 45 limit 44 to yr="1994 -Current" (33)

Database name	HMIC
Database host	Ovid SP
Database coverage dates	1979 – January 2014
Searcher	Hannah Wood
Search date	28/02/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	223
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	210 (13 direct to Duplicate library)
Reference numbers of records in EndNote library	11413-11616, 15525-15530*
Number of records after de-duplication in EndNote library	109

* These records were originally imported merged with other records, due to import filter error, and were restored.

Database: HMIC Health Management Information Consortium <1979 to January 2014>

Search Strategy:

- 1 sun/ or sunlight/ (87)
- 2 ultraviolet radiation/ or ultraviolet radiation effects on humans/ or ultraviolet radiation hazards/ (94)
- 3 sunburn/ or sunlight hazards/ (48)
- 4 sunscreens/ (12)
- 5 ((sun or suns or sunning or sunshine or sunlight\$) adj3 (damag\$ or protect\$ or safe or safety or risk\$ or benefit\$1 or beneficial or index or indexes or exposure\$1 or overexposure\$1 or expose\$1 or overexpose\$1 or underexpose\$1 or underexposure\$1)).ti,ab. (147)
- 6 ((uv or uva or uvb or uvc or ultra-violet or ultraviolet or solar) adj3 (ray\$1 or radiation or irradiat\$ or damag\$ or protect\$ or safe or safety or risk\$ or benefit\$1 or beneficial or index or indexes or exposure\$1 or overexposure\$1 or expose\$1 or overexpose\$1)).ti,ab. (116)
- 7 (sunscreens\$ or sun-screen\$ or sunblock\$ or sun-block\$ or spf or sunburn\$ or sun-burn\$ or photo-damag\$ or photodamag\$ or photoag\$ or photo-ag\$ or photo-expos\$ or photoexpos\$).ti,ab. (52)
- 8 (sunbath\$ or sun-bath\$ or suntan\$ or tan or tans or tanning or tanned or sunbed\$1 or sunbed\$ or sunlamp\$1 or sun-lamp\$ or solarium\$1 or solaria\$).ti,ab. (82)
- 9 exp Vitamin D Deficiency/ (60)
- 10 melanoma/ (138)
- 11 Skin cancer/ (238)
- 12 (vitaminD\$1 or vitamin D or cholecalciferol\$ or colecalciferol\$ or ergocalciferol\$ or calciferol\$ or alfacalcidol\$).ti,ab. (225)
- 13 (osteomalacia or rickets or hypovitaminosis D).ti,ab. (38)
- 14 ((skin or skins) adj3 (cancer\$ or neoplasm\$ or tumor\$ or tumour\$ or carcinoma\$ or malignan\$)).ti,ab. (285)
- 15 (melanoma\$ or basal cell carcinoma\$ or squamous cell carcinoma\$).ti,ab. (331)
- 16 or/1-15 (956)
- 17 exp health promotion/ (10414)
- 18 consumer health information/ or consumer information/ or health literacy/ or patient education/ or patient information/ or patient knowledge/ (4255)
- 19 exp mass media/ (730)
- 20 mass media exposure/ or media coverage/ (254)
- 21 exp teaching materials/ (363)
- 22 exp product promotion/ (776)
- 23 social marketing/ or strategic marketing/ (113)
- 24 social networks/ (296)
- 25 communication/ or exp interpersonal communication/ or exp mass communication/ or medical communication/ or patient communication/ or persuasion/ or verbal communication/ or written communication/ (5722)
- 26 exp "dissemination of information"/ (835)

- 27 counselling/ or educational counselling/ or group counselling/ or nurse counselling/ or patient counselling/ or advocacy/ or mentoring/ (2128)
- 28 ((risk\$ or probabilit\$ or uncertain\$ or message\$1 or communicat\$ or marketing or advice or advise\$ or advising or appeal\$1 or loss or gain or positive\$ or negative\$) adj3 (frame or framed or framing)).ti,ab. (33)
- 29 ((risk\$ or probabilit\$ or uncertain\$) adj3 (notif\$ or inform\$ or message\$1 or communicat\$ or marketing or campaign\$ or publiciz\$ or publicis\$ or publicity or advice or advise\$ or advising or perceive\$ or perception\$)).ti,ab. (1020)
- 30 ((tailor\$ or personal\$ or individual\$ or targeted or targeting) adj3 (message\$1 or material\$1 or communica\$ or feedback or feed back or promot\$ or market\$ or campaign\$)).ti,ab. (641)
- 31 ((cognitive or cognition or associative or affective or positiv\$ or negativ\$) adj3 message\$1).ti,ab. (29)
- 32 (decision aid\$1 or decision tool\$1 or decision support\$).ti,ab. (649)
- 33 ((shared or informed) adj3 (decision\$1 or choice\$1)).ti,ab. (1086)
- 34 ((health\$ or health care or lifestyle\$ or life style\$1 or consumer\$1) adj2 (information or message\$1 or communicat\$)).ti,ab. (3291)
- 35 (education\$ adj2 (program\$ or intervention\$1 or meeting\$1 or session\$1 or strateg\$ or workshop\$1 or visit\$ or material\$1)).ti,ab. (2420)
- 36 (behavio?r\$ adj2 intervention\$).ti,ab. (273)
- 37 (outreach or out reach).ti,ab. (859)
- 38 ((family or families or parent\$ or care-giver\$ or caregiver\$ or carer or carers or guardian\$ or wife or wives or husband or husbands or spouse\$1 or spousal or partner or partners or mother\$ or father\$ or teacher\$1) adj3 (led or educat\$ or train\$ or teach or teaches or teaching or taught or involv\$ or intervention\$ or program\$ or session\$1)).ti,ab. (3164)
- 39 (work-based or workplace-based or worksite-based or community-led or community-based or community-wide or community-centred or community-centered or community-run or community intervention\$ or community program\$ or community scheme\$ or faith-based or faith-led or church-based or church-led).ti,ab. (3016)
- 40 ((work or workplace\$ or work place\$ or employer\$ or school\$ or playschool\$ or preschool\$ or nursery or nurseries or kindergarten\$ or creche\$ or highschool\$ or afterschool) adj3 (led or educat\$ or train\$ or teach\$ or involv\$ or intervention\$ or program\$ or session\$1)).ti,ab. (4040)
- 41 ((health\$ worker\$ or health-care worker\$ or health\$ professional\$ or health-care professional\$ or health\$ personnel or health-care personnel or general-practitioner\$ or gp or gps or nurse\$1 or health visitor\$1 or midwife or midwives or clinician\$1 or pharmacist\$ or primary care or general practice or family doctor\$1 or family practi\$ or dermatologist\$1 or nutritionist\$1) adj3 (led or educat\$ or train\$ or teach\$ or involv\$ or intervention\$ or program\$ or session\$1)).ti,ab. (9707)
- 42 ((brief or opportunist\$ or concise or short or direct or lifestyle or written or oral or verbal or personali?ed or individuali?ed or motivational) adj2 (advice or negotiation\$ or guidance or discussion\$ or encouragement or intervention\$ or program\$ or meeting\$ or session\$ or interview\$)).ti,ab. (1217)
- 43 ((community or consumer or pressure) adj (group\$1 or organi?ation\$1)).ti,ab. (667)
- 44 (coach\$ or mentor\$ or counsel\$ or champion\$ or self-study or self-guided).ti,ab. (4355)
- 45 ((opinion or education\$ or influential) adj1 leader\$).ti,ab. (113)
- 46 ((group or peer) adj2 (educat\$ or support\$)).ti,ab. (818)
- 47 (pictogram\$ or picto-gram\$ or pictograph\$ or picto-graph\$ or infogram\$ or info-gram\$ or infographic\$ or info-graphic\$).ti,ab. (17)
- 48 ((graphic\$ or visual\$ or pictorial or illustra\$ or print\$) adj3 (image\$1 or stimuli or display\$ or dissemin\$ or present or presented or presentation\$1 or communicat\$ or message\$1 or advice or feedback or feed back or inform or information or aid or aids or representation\$1 or material\$1)).ti,ab. (677)
- 49 ((data or statistic\$ or graph or graphs or numeric\$ or verbal or textual or written) adj3 (stimuli or display\$1 or dissemin\$ or presented or presentation\$1 or communicat\$ or message\$1 or advice or feedback or feed back or inform or information or aid or aids or representation\$1 or material\$1)).ti,ab. (2549)
- 50 ((story or stories or narrative\$1 or testimon\$ or first person) not narrative review\$1).ti,ab. (1994)

- 51 (mass media\$ or new media\$ or national media\$ or local media\$ or regional media\$ or social media\$ or social network\$ or marketing or marketed or television\$1 or tele-vision\$1 or tv or advert\$ or billboard\$1 or bill-board\$1 or poster\$1 or cinema\$ or video\$1 or newspaper\$1 or news or magazine\$1 or journalis\$ or comic\$1 or cartoon\$1 or leaflet\$1 or pamphlet\$1 or booklet\$1 or workbook\$1 or work-book\$1 or handbook\$1 or hand-book\$1 or radio or radios or internet or multimedia or multi-media or web or website\$ or interactive or inter-active or facebook or twitter or youtube or you-tube or mail\$ out\$1 or mailout\$1 or mail-shot\$1 or mailshot\$1 or flyer\$1).ti,ab. (15929)
- 52 (phone\$1 or telephone\$1 or smartphone\$1 or email\$1 or e mail or electronic mail\$1 or text messag\$ or texting or sms or short messag\$ or app or apps or android\$ or blackberr\$ or iphone\$1 or ipad\$1 or ehealth or e health or mhealth or m health or telehealth\$ or tele-health\$).ti,ab. (4499)
- 53 (media\$1 adj3 (coverage or report\$ or article\$ or content\$ or present\$ or discuss\$ or messag\$ or campaign\$)).ti,ab. (592)
- 54 (appearance adj3 (based or focused or orientated)).ti,ab. (9)
- 55 ((uv or ultra-violet or ultraviolet) adj4 (photo\$1 or photograph\$ or image\$1 or imaging)).ti,ab. (0)
- 56 ((lifestyle\$ or behavior\$ or behaviour\$) adj3 (change\$ or changing or modification\$ or modify\$ or modifies)).ti,ab. (1974)
- 57 exp attitudes/ (18311)
- 58 health beliefs/ (192)
- 59 awareness/ or public awareness/ (403)
- 60 social perception/ (83)
- 61 behaviour modification/ (202)
- 62 professional role/ (2892)
- 63 (skinsafe\$ or sunsafe\$ or sunsmart\$ or sunwise\$ or pool cool or kidskin or kid skin or slipslopslap or slip slop slap or shunburn or shun burn).ti,ab. (6)
- 64 ((sun or suns or sunning or sunshine or sunlight\$ or sunbath\$ or suntan\$ or sunbed\$1 or sunlamp\$1 or sunscreen\$ or sunblock\$ or solarium\$1 or solaria\$ or uv or uva or uvb or uvc or ultraviolet or ultra-violet or tan or tans or tanning or tanned or spf) adj5 (risk\$ or benefit\$ or protect\$ or exposure\$ or safe\$) adj5 (knowledg\$ or attitude\$ or behavio\$ or value\$ or understand\$ or belief\$ or believe or perception\$ or perceive\$ or view or views or prefer\$ or intention\$ or habit\$1 or practice\$ or comply or complies or compliance or adhere\$1 or adherence or concordance or accordance or accept\$ or motivation\$1 or awareness\$ or uptake or up-take or takeup or take-up or barrier\$1 or facilitator\$1 or utilis\$ or utiliz\$)).ti,ab. (45)
- 65 or/17-62 (82714)
- 66 16 and 65 (238)
- 67 66 or (63 or 64) (256)
- 68 limit 67 to yr="1994 -Current" (223)

Database name	PsycINFO
Database host	Ovid SP
Database coverage dates for final search	1806- March Week 3 2014
Searcher	Hannah Wood
Search date	Search 1 st run 15/03/14, on realizing that total number of records not exported correctly search repeated 20/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	1004 (search 20/03/14), 998 of these identified during search 1 (15/03/14), the remainder new records added to database since 15/03/14
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	Search 1 398 (223 direct to Duplicate library) – on realizing total number not exported and therefore loaded to EndNote, search re-run. Search 2 268 (736 direct to duplicate Library)
Reference numbers of records in EndNote library	11662-12060, 16537-16805
Number of records after de-duplication in EndNote library	489

Database: PsycINFO <1806 to March Week 3 2014>

Search Strategy:

- 1 ((sun or suns or sunning or sunshine or sunlight\$) adj3 (damag\$ or protect\$ or safe or safety or risk\$ or benefit\$1 or beneficial or index or indexes or exposure\$1 or overexposure\$1 or expose\$1 or overexpose\$1 or underexpose\$1 or underexposure\$1)).ti,ab. (627)
- 2 ((uv or uva or uvb or uvc or ultra-violet or ultraviolet or solar) adj3 (ray\$1 or radiation or irradiat\$ or damag\$ or protect\$ or safe or safety or risk\$ or benefit\$1 or beneficial or index or indexes or exposure\$1 or overexposure\$1 or expose\$1 or overexpose\$1)).ti,ab. (436)
- 3 (sunscreen\$ or sun-screen\$ or sunblock\$ or sun-block\$ or spf or sunburn\$ or sun-burn\$ or photo-damag\$ or photodamag\$ or photoag\$ or photo-ag\$ or photo-expos\$ or photoexpos\$).ti,ab. (436)
- 4 (sunbath\$ or sun-bath\$ or suntan\$ or tan or tans or tanning or tanned or sunbed\$1 or sunbed\$ or sunlamp\$1 or sun-lamp\$ or solarium\$1 or solaria\$).ti,ab. (620)
- 5 (vitaminD\$1 or vitamin D or cholecalciferol\$ or coledcalciferol\$ or ergocalciferol\$ or calciferol\$ or alfalcidol\$).ti,ab. (935)
- 6 (osteomalacia or rickets or hypovitaminosis D).ti,ab. (143)
- 7 ((skin or skins) adj3 (cancer\$ or neoplasm\$ or tumor\$ or tumour\$ or carcinoma\$ or malignan\$)).ti,ab. (507)
- 8 (melanoma\$ or basal cell carcinoma\$ or squamous cell carcinoma\$).ti,ab. (666)
- 9 or/1-8 (3296)
- 10 health behavior/ (16070)
- 11 communication/ or exp communications media/ or communication barriers/ or exp interpersonal communication/ or persuasive communication/ or exp verbal communication/ or information dissemination/ or knowledge transfer/ or messages/ (183253)
- 12 health education/ or client education/ or health knowledge/ or health literacy/ (17360)
- 13 advertising/ or exp marketing/ or public relations/ or health promotion/ or public service announcements/ (36153)
- 14 exp teaching/ (87494)
- 15 Framing Effects/ (589)
- 16 exp counseling/ (65180)
- 17 health communication.jn. (945)
- 18 journal of health communication.jn. (944)
- 19 ((risk\$ or probabilit\$ or uncertain\$ or message\$1 or communicat\$ or marketing or advice or advise\$ or advising or appeal\$1 or loss or gain or positive\$ or negative\$) adj3 (frame or framed or framing)).ti,ab. (1358)

- 20 ((risk\$ or probabilit\$ or uncertain\$) adj3 (notif\$ or inform\$ or message\$1 or communicat\$ or marketing or campaign\$ or publiciz\$ or publicis\$ or publicity or advice or advise\$ or advising or perceive\$ or perception\$)).ti,ab. (12555)
- 21 ((tailor\$ or personal\$ or individual\$ or targeted or targeting) adj3 (message\$1 or material\$1 or communica\$ or feedback or feed back or promot\$ or market\$ or campaign\$)).ti,ab. (9967)
- 22 ((cognitive or cognition or associative or affective or positiv\$ or negativ\$) adj3 message\$1).ti,ab. (1052)
- 23 (decision aid\$1 or decision tool\$1 or decision support\$).ti,ab. (2780)
- 24 ((shared or informed) adj3 (decision\$1 or choice\$1)).ti,ab. (4102)
- 25 ((health\$ or health care or lifestyle\$ or life style\$1 or consumer\$1) adj2 (information or message\$1 or communicat\$)).ti,ab. (8771)
- 26 (education\$ adj2 (program\$ or intervention\$1 or meeting\$1 or session\$1 or strateg\$ or workshop\$1 or visit\$ or material\$1)).ti,ab. (31278)
- 27 (behavio?r\$ adj2 intervention\$).ti,ab. (9576)
- 28 (outreach or out reach).ti,ab. (4826)
- 29 ((family or families or parent\$ or care-giver\$ or caregiver\$ or carer or carers or guardian\$ or wife or wives or husband or husbands or spouse\$1 or spousal or partner or partners or mother\$ or father\$ or teacher\$1) adj3 (led or educat\$ or train\$ or teach or teaches or teaching or taught or involv\$ or intervention\$ or program\$ or session\$1)).ti,ab. (86229)
- 30 (work-based or workplace-based or worksite-based or community-led or community-based or community-wide or community-centred or community-centered or community-run or community intervention\$ or community program\$ or community scheme\$ or faith-based or faith-led or church-based or church-led).ti,ab. (22650)
- 31 ((work or workplace\$ or work place\$ or employer\$ or school\$ or playschool\$ or preschool\$ or nursery or nurseries or kindergarten\$ or creche\$ or highschool\$ or afterschool) adj3 (led or educat\$ or train\$ or teach\$ or involv\$ or intervention\$ or program\$ or session\$1)).ti,ab. (77418)
- 32 ((health\$ worker\$ or health-care worker\$ or health\$ professional\$ or health-care professional\$ or health\$ personnel or health-care personnel or general-practitioner\$ or gp or gps or nurse\$1 or health visitor\$1 or midwife or midwives or clinician\$1 or pharmacist\$ or primary care or general practice or family doctor\$1 or family practi\$ or dermatologist\$1 or nutritionist\$1) adj3 (led or educat\$ or train\$ or teach\$ or involv\$ or intervention\$ or program\$ or session\$1)).ti,ab. (17142)
- 33 ((brief or opportunist\$ or concise or short or direct or lifestyle or written or oral or verbal or personali?ed or individuali?ed or motivational) adj2 (advice or negotiation\$ or guidance or discussion\$ or encouragement or intervention\$ or program\$ or meeting\$ or session\$ or interview\$)).ti,ab. (18198)
- 34 ((community or consumer or pressure) adj (group\$1 or organi?ation\$1)).ti,ab. (2878)
- 35 (coach\$ or mentor\$ or counsel\$ or champion\$ or self-study or self-guided).ti,ab. (103571)
- 36 ((opinion or education\$ or influential) adj1 leader\$).ti,ab. (2513)
- 37 ((group or peer) adj2 (educat\$ or support\$)).ti,ab. (10357)
- 38 (pictogram\$ or picto-gram\$ or pictograph\$ or picto-graph\$ or infogram\$ or info-gram\$ or infographic\$ or info-graphic\$).ti,ab. (319)
- 39 ((graphic\$ or visual\$ or pictorial or illustra\$ or print\$) adj3 (image\$1 or stimuli or display\$ or dissemin\$ or present or presented or presentation\$1 or communicat\$ or message\$1 or advice or feedback or feed back or inform or information or aid or aids or representation\$1 or material\$1)).ti. (5919)
- 40 ((data or statistic\$ or graph or graphs or numeric\$ or verbal or textual or written) adj3 (stimuli or display\$1 or dissemin\$ or presented or presentation\$1 or communicat\$ or message\$1 or advice or feedback or feed back or inform or information or aid or aids or representation\$1 or material\$1)).ti. (2832)
- 41 ((story or stories or narrative\$1 or testimon\$ or first person) not narrative review\$1).ti,ab. (79746)
- 42 (mass media\$ or new media\$ or national media\$ or local media\$ or regional media\$ or social media\$ or social network\$ or marketing or marketed or television\$1 or tele-vision\$1 or tv or advert\$ or billboard\$1 or bill-board\$1 or poster\$1 or cinema\$ or video\$1 or newspaper\$1 or news or magazine\$1 or journalis\$ or comic\$1 or cartoon\$1 or leaflet\$1 or pamphlet\$1 or booklet\$1 or workbook\$1 or work-book\$1 or handbook\$1 or hand-book\$1 or radio or radios or internet or multimedia or multi-media or web or website\$ or interactive or inter-active or facebook or twitter or youtube or you-tube or mail\$ out\$1 or mailout\$1 or mail-shot\$1 or mailshot\$1 or flyer\$1).ti,ab. (171554)

- 43 (phone\$1 or telephone\$1 or smartphone\$1 or email\$1 or e mail or electronic mail\$1 or text messag\$ or texting or sms or short messag\$ or app or apps or android\$ or blackberr\$ or iphone\$1 or ipad\$1 or ehealth or e health or mhealth or m health or telehealth\$ or tele-health\$).ti,ab. (32165)
- 44 (media\$1 adj3 (coverage or report\$ or article\$ or content\$ or present\$ or discuss\$ or messag\$ or campaign\$)).ti,ab. (6392)
- 45 (appearance adj3 (based or focused or orientated)).ti,ab. (344)
- 46 ((uv or ultra-violet or ultraviolet) adj4 (photo\$1 or photograph\$ or image\$1 or imaging)).ti,ab. (22)
- 47 ((lifestyle\$ or behavior\$ or behaviour\$) adj3 (change\$ or changing or modification\$ or modify\$ or modifies)).ti,ab. (40598)
- 48 exp attitudes/ (263379)
- 49 attitude change/ or attitude formation/ or irrational beliefs/ or stigma/ or world view/ (17638)
- 50 motivation/ or intention/ (45663)
- 51 exp social perception/ (41840)
- 52 social desirability/ or social influences/ (13687)
- 53 risk perception/ or exp risk taking/ (23313)
- 54 exp health personnel/ (100579)
- 55 (skinsafe\$ or sunsafe\$ or sunsmart\$ or sunwise\$ or pool cool or kidskin or kid skin or slipslopslap or slip slop slap or shunburn or shun burn).ti,ab. (24)
- 56 or/10-54 (1125752)
- 57 9 and 56 (1042)
- 58 ((sun or suns or sunning or sunshine or sunlight\$ or sunbath\$ or suntan\$ or sunbed\$1 or sunlamp\$1 or sunscreen\$ or sunblock\$ or solarium\$1 or solaria\$ or uv or uva or uvb or uvc or ultraviolet or ultra-violet or tan or tans or tanning or tanned or spf) adj5 (risk\$ or benefit\$ or protect\$ or exposure\$ or safe\$) adj5 (knowledg\$ or attitude\$ or behavio\$ or value\$ or understand\$ or belief\$ or believe or perception\$ or perceive\$ or view or views or prefer\$ or intention\$ or habit\$1 or practice\$ or comply or complies or compliance or adhere\$1 or adherence or concordance or accordance or accept\$ or motivation\$1 or awareness\$ or uptake or up-take or takeup or take-up or barrier\$1 or facilitator\$1 or utilis\$ or utiliz\$)).ti,ab. (355)
- 59 57 or 58 or 55 (1084)
- 60 limit 59 to (english language and yr="1994 -Current") (1004)

Database name	Social Policy & Practice
Database host	Ovid SP
Database coverage dates	1890- January 2014
Searcher	Hannah Wood
Search date	06/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	173
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	167 (6 direct to Duplicate library)
Reference numbers of records in EndNote library	12062-12228
Number of records after de-duplication in EndNote library	137

Database: Social Policy and Practice <201401>

Search Strategy:

- 1 ((sun or suns or sunning or sunshine or sunlight\$) adj3 (damag\$ or protect\$ or safe or safety or risk\$ or benefit\$1 or beneficial or index or indexes or exposure\$1 or overexposure\$1 or expose\$1 or overexpose\$1 or underexpose\$1 or underexposure\$1)).ti,ab,de. (43)
- 2 ((uv or uva or uvb or uvc or ultra-violet or ultraviolet or solar) adj3 (ray\$1 or radiation or irradiat\$ or damag\$ or protect\$ or safe or safety or risk\$ or benefit\$1 or beneficial or index or indexes or exposure\$1 or overexposure\$1 or expose\$1 or overexpose\$1)).ti,ab,de. (19)
- 3 (sunscreen\$ or sun-screen\$ or sunblock\$ or sun-block\$ or spf or sunburn\$ or sun-burn\$ or photo-damag\$ or photodamag\$ or photoag\$ or photo-ag\$ or photo-expos\$ or photoexpos\$).ti,ab,de. (14)
- 4 (sunbath\$ or sun-bath\$ or suntan\$ or tan or tans or tanning or tanned or sunbed\$1 or sunbed\$ or sunlamp\$1 or sun-lamp\$ or solarium\$1 or solaria\$).ti,ab,de. (40)
- 5 (vitaminD\$1 or vitamin D or cholecalciferol\$ or colecalciferol\$ or ergocalciferol\$ or calciferol\$ or alfacalcidol\$).ti,ab,de. (67)
- 6 (osteomalacia or rickets or hypovitaminosis D).ti,ab,de. (23)
- 7 ((skin or skins) adj3 (cancer\$ or neoplasm\$ or tumor\$ or tumour\$ or carcinoma\$ or malignan\$)).ti,ab,de. (39)
- 8 (melanoma\$ or basal cell carcinoma\$ or squamous cell carcinoma\$).ti,ab,de. (15)
- 9 or/1-8 (191)
- 10 (skinsafe\$ or sunsafe\$ or sunsmart\$ or sunwise\$ or pool cool or kidskin or kid skin or slipslopslap or slip slop slap or shunburn or shun burn).ti,ab,de. (3)
- 11 ((sun or suns or sunning or sunshine or sunlight\$ or sunbath\$ or suntan\$ or sunbed\$1 or sunlamp\$1 or sunscreen\$ or sunblock\$ or solarium\$1 or solaria\$ or uv or uva or uvb or uvc or ultraviolet or ultra-violet or tan or tans or tanning or tanned or spf) adj5 (risk\$ or benefit\$ or protect\$ or exposure\$ or safe\$) adj5 (knowledg\$ or attitude\$ or behavio\$ or value\$ or understand\$ or belief\$ or believe or perception\$ or perceive\$ or view or views or prefer\$ or intention\$ or habit\$1 or practice\$ or comply or complies or compliance or adhere\$1 or adherence or concordance or accordance or accept\$ or motivation\$1 or awareness\$ or uptake or up-take or takeup or take-up or barrier\$1 or facilitator\$1 or utilis\$ or utiliz\$)).ti,ab,de. (10)
- 12 9 or 10 or 11 (192)
- 13 limit 12 to yr="1994 -Current" (173)

Database name	Social Sciences Citation Index (SSCI)
Database host	Web of Knowledge (Thomson Reuters)
Database coverage dates	1956 – 28/02/2014
Searcher	Hannah Wood
Search date	06/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	1543
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	784 (759 direct to Duplicate library)
Reference numbers of records in EndNote library	12231-13014
Number of records after de-duplication in EndNote library	598

- # 43 1,543 #42 OR #41 OR #40
- # 42 625 TS=(("sun" OR "suns" OR "sunning" OR "sunshine" OR sunlight* OR sunbath* OR suntan* OR sunbed* OR sunlamp* OR sunscreen* OR sunblock* OR solarium* OR solaria* OR "uv" OR "uva" OR "uvb" OR "uvc" OR "ultraviolet" OR "ultra-violet" OR "tan" OR "tans" OR "tanning" OR "tanned" OR "spf") NEAR/5 (risk* OR benefit* OR protect* OR exposure* OR safe*) NEAR/5 (knowledg* OR attitude* OR behavio* OR value* OR understand* OR belief* OR believe OR perception* OR perceive* OR view OR views OR prefer* OR intention* OR habit* OR practice* OR "comply" OR "complies" OR "compliance" OR adhere* OR "adherence" OR "concordance" OR "accordance" OR accept* OR motivation* OR awareness* OR "uptake" OR "up-take" OR "takeup" OR "take-up" OR barrier* OR facilitator* OR utilis* OR utiliz*))
- # 41 64 TS=(skinsafe* OR sunsafe* OR sunsmart* OR sunwise* OR "pool cool" OR "kidskin" OR "kid skin" OR "slipslopslap" OR "slip slop slap" OR "shunburn" OR "shun burn")
- # 40 1,306 #39 AND #9
- # 39 573,871 #38 OR #37 OR #36 OR #35 OR #34 OR #33 OR #32 OR #31 OR #30 OR #29 OR #28 OR #27 OR #26 OR #25 OR #24 OR #23 OR #22 OR #21 OR #20 OR #19 OR #18 OR #17 OR #16 OR #15 OR #14 OR #13 OR #12 OR #11 OR #10
- # 38 23,804 TS=((lifestyle* OR behavior* OR behaviour*) NEAR/3 (change* OR "changing" OR modification* OR modify* OR "modifies"))
- # 37 60 TS=(("uv" OR "ultra-violet" OR "ultraviolet") NEAR/4 (photo* OR photograph* OR image* OR "imaging"))
- # 36 294 TS=("appearance" NEAR/3 ("based" OR "focused" OR "orientated"))
- # 35 10,286 TS=(media* NEAR/3 ("coverage" OR report* OR article* OR content* OR present* OR discuss* OR messag* OR campaign*))
- # 34 40,161 TS=(phone* OR telephone* OR smartphone* OR email* OR "e mail" OR "electronic mail*" OR "text messag*" OR "texting" OR "sms" OR "short messag*" OR "app" OR "apps" OR android* OR blackberr* OR iphone* OR ipad* OR "ehealth" OR "e health" OR "mhealth" OR "m health" OR telehealth* OR "tele-health*")
- # 33 209,064 TS=("mass media*" OR "new media*" OR "national media*" OR "local media*" OR "regional media*" OR "social media*" OR "social network*" OR "marketing" OR "marketed" OR television* OR "tele-vision*" OR "tv" OR advert* OR billboard* OR "bill-board*" OR poster* OR cinema* OR video* OR newspaper* OR "news" OR magazine* OR journalis* OR comic* OR cartoon* OR leaflet* OR pamphlet* OR booklet* OR wORKbook* OR wORK-book* OR handbook* OR hand-book* OR "radio" OR "radios" OR "internet" OR "multimedia" OR "multi-media" OR "web" OR website* OR "interactive" OR "inter-active" OR "facebook" OR "twitter" OR "youtube" OR "you-tube" OR "mail* out*" OR mailout* OR "mail-shot*" OR mailshot* OR flyer*)

- # 32 59,193 TS=(("story" OR "stories" OR narrative* OR testimon* OR "first person") NOT ("narrative review*"))
- # 31 27,941 TS=(("data" OR statistic* OR "graph" OR "graphs" OR numeric* OR "verbal" OR "textual" OR "written") NEAR/3 ("stimuli" OR display* OR dissemin* OR "presented" OR presentation* OR communicat* OR message* OR "advice" OR "feedback" OR "feed back" OR "inform" OR "information" OR aid OR aids OR representation* OR material*))
- # 30 27,843 TS=((graphic* OR visual* OR "pictorial" OR illustra* OR print*) NEAR/3 (image* OR "stimuli" OR display* OR dissemin* OR "present" OR "presented" OR presentation* OR communicat* OR message* OR "advice" OR "feedback" OR "feed back" OR "inform" OR "information" OR "aid" OR "aids" OR representation* OR material*))
- # 29 276 TS=(pictogram* OR picto-gram* OR pictograph* OR picto-graph* OR infogram* OR info-gram* OR infographic* OR info-graphic*)
- # 28 8,643 TS=(("group" OR "peer") NEAR/2 (educat* OR "support"))
- # 27 1,617 TS=(("opinion" OR education* OR "influential") NEAR/1 leader*)
- # 26 41,941 TS=(coach* OR mentor* OR counsel* OR champion* OR "self-study" OR "self-guided")
- # 25 5,986 TS=(("community" OR "consumer" OR "pressure") NEAR/1 (group* OR organi?ation*))
- # 24 15,410 TS=(("brief" OR opportunist* OR "concise" OR "short" OR "direct" OR "lifestyle" OR "written" OR "oral" OR "verbal" OR "personali?ed" OR "individuali?ed" OR "motivational") NEAR/2 ("advice" OR negotiation* OR "guidance" OR discussion* OR "encouragement" OR intervention* OR program* OR meeting* OR session* OR interview*))
- # 23 22,790 TS=(("health* worker*" OR "health-care worker*" OR "health* professional*" OR "heath-care professional*" OR "health* personnel" OR "health-care personnel" OR "general-practitioner*" OR "gp" OR "gps" OR nurse* OR "health visitor*" OR "midwife" OR "midwives" OR clinician* OR pharmacist* OR "primary care" OR "general practice" OR "family doctor*" OR "family practi*" OR dermatologist* OR nutritionist*) NEAR/3 ("led" OR educat* OR train* OR teach* OR involv* OR intervention* OR program* OR session*))
- # 22 52,952 TS=(("work" OR workplace* OR "work place*" OR employer* OR school* OR playschool* OR preschool* OR "nursery" OR "nurseries" OR kindergarten* OR creche* OR highschool* OR "afterschool") NEAR/3 ("led" OR educat* OR train* OR teach* OR involv* OR intervention* OR program* OR session*))
- # 21 22,811 TS=(("work-based" OR "workplace-based" OR "worksite-based" OR "community-led" OR "community-based" OR "community-wide" OR "community-centred" OR "community-centered" OR "community-run" OR "community intervention*" OR "community program*" OR "community scheme*" OR "faith-based" OR "faith-led" OR "church-based" OR "church-led")
- # 20 58,054 TS=(("family" OR "families" OR parent* OR care-giver* OR caregiver* OR "carer" OR "carers" OR guardian* OR "wife" OR "wives" OR "husband" OR "husbands" OR spouse* OR "spousal" OR "partner" OR "partners" OR mother* OR father* OR teacher*) NEAR/3 ("led" OR educat* OR train* OR "teach" OR "teaches" OR "teaching" OR "taught" OR involv* OR intervention* OR program* OR session*))
- # 19 4,970 TS=(outreach OR "out reach")
- # 18 10,608 TS=(behavio* NEAR/2 intervention*)
- # 17 26,899 TS=(education* NEAR/2 (program* OR intervention* OR meeting* OR session* OR strateg* OR workshop* OR visit* OR material*))
- # 16 18,240 TS=((health* OR "health care" OR lifestyle* OR "life style*" OR consumer*) NEAR/2 ("information" OR message* OR communicat*))
- # 15 5,565 TS=(("shared" OR "informed") NEAR/3 (decision* OR choice*))
- # 14 7,785 TS=(("decision aid*" OR "decision tool*" OR "decision support*"))
- # 13 787 TS=(("cognitive" OR "cognition" OR "associative" OR "affective" OR positiv* OR negativ*) NEAR/3 message*)

- # 12 11,037 TS=((tailor* OR personal* OR individual* OR "targeted" OR "targeting") NEAR/3 (message* OR material* OR communica* OR "feedback" OR "feed back" OR promot* OR market* OR campaign*))
- # 11 22,511 TS=((risk* OR probabilit* OR uncertain*) NEAR/3 (notif* OR inform* OR message* OR communicat* OR "marketing" OR campaign* OR publiciz* OR publicis* OR "publicity" OR "advice" OR advise* OR "advising" OR perceive* OR perception*))
- # 10 1,521 TS=((risk* OR probabilit* OR uncertain* OR message* OR communicat* OR "marketing" OR "advice" OR advise* OR "advising" OR appeal* OR "loss" OR "gain" OR positive* OR negative*) NEAR/3 ("frame" OR "framed" OR "framing"))
- # 9 5,059 #8 OR #7 OR #6 OR #5 OR #4 OR #3 OR #2 OR #1
- # 8 1,649 TS=(melanoma* OR "basal cell carcinoma*" OR "squamous cell carcinoma*")
- # 7 1,185 TS=(("skin" OR "skins") NEAR/3 (cancer* OR neoplasm* OR tumor* OR tumour* OR carcinoma* OR malignan*))
- # 6 183 TS=("osteomalacia" OR "rickets" OR "hypovitaminosis D")
- # 5 1,506 TS=(vitaminD* OR "vitamin D" OR cholecalciferol* OR colecalciferol* OR ergocalciferol* OR calciferol* OR alfalcidol*)
- # 4 757 TS=(sunbath* OR sun-bath* OR suntan* OR "tan" OR "tans" OR "tanning" OR "tanned" OR sunbed* OR sun-bed* OR sunlamp* OR sun-lamp* OR solarium* OR solaria*)
- # 3 741 TS=(sunscreen* OR sun-screen* OR sunblock* OR sun-block* OR "spf" OR sunburn* OR sun-burn* OR photo-damag* OR photodamag* OR photoag* OR photo-ag* OR photo-expos* OR photoexpos*)
- # 2 825 TS=(("uv" OR "uva" OR "uvb" OR "uvc" OR "ultra-violet" OR "ultraviolet" OR "solar") NEAR/3 (ray* OR "radiation" OR irradiat* OR damag* OR protect* OR "safe" OR "safety" OR risk* OR benefit* OR "beneficial" OR "index" OR "indexes" OR exposure* OR overexposure* OR expose* OR overexpose*))
- # 1 1,033 TS=(("sun" OR "suns" OR "sunning" OR "sunshine" OR sunlight*) NEAR/3 (damag* OR protect* OR "safe" OR "safety" OR risk* OR benefit* OR "beneficial" OR "index" OR "indexes" OR exposure* OR overexposure* OR expose* OR overexpose* OR underexpose* OR underexposure*))

Indexes=SSCI Timespan=1994-2014

Database name	CINAHL Plus
Database host	EBSCO Host
Database coverage dates	1937-2014
Searcher	Hannah Wood
Search date	13/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	3014
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	1983 (1031 direct to Duplicate library)
Reference numbers of records in EndNote library	13056-15038
Number of records after de-duplication in EndNote library	1618

- S74 S72 AND S73
3,014
- S73 PY 199401-
3,653,611
- S72 S63 OR S71
3,093
- S71 S64 OR S65 OR S66 OR S67 OR S68 OR S69 OR S70
465
- S70 AB((sun OR suns OR sunning OR sunshine OR sunlight* OR sunbath* OR suntan* OR sunbed* OR sunlamp* OR sunscreen* OR sunblock* OR solarium* OR solaria* OR uv OR uva OR uvb OR uvc OR ultraviolet OR "ultra-violet" OR tan OR tans OR tanning OR tanned OR spf) N5 (risk* OR benefit* OR protect* OR exposure* OR safe*) N5 (uptake OR "up-take" OR takeup OR "take-up" OR barrier* OR facilitator* OR utilis* OR utiliz*))
23
- S69 TI((sun OR suns OR sunning OR sunshine OR sunlight* OR sunbath* OR suntan* OR sunbed* OR sunlamp* OR sunscreen* OR sunblock* OR solarium* OR solaria* OR uv OR uva OR uvb OR uvc OR ultraviolet OR "ultra-violet" OR tan OR tans OR tanning OR tanned OR spf) N5 (risk* OR benefit* OR protect* OR exposure* OR safe*) N5 (uptake OR "up-take" OR takeup OR "take-up" OR barrier* OR facilitator* OR utilis* OR utiliz*))
3
- S68 AB((sun OR suns OR sunning OR sunshine OR sunlight* OR sunbath* OR suntan* OR sunbed* OR sunlamp* OR sunscreen* OR sunblock* OR solarium* OR solaria* OR uv OR uva OR uvb OR uvc OR ultraviolet OR "ultra-violet" OR tan OR tans OR tanning OR tanned OR spf) N5 (risk* OR benefit* OR protect* OR exposure* OR safe*) N5 (comply OR complies OR compliance OR adhere* OR adherence OR concordance OR accordance OR accept* OR motivation* OR awareness*))
43
- S67 TI((sun OR suns OR sunning OR sunshine OR sunlight* OR sunbath* OR suntan* OR sunbed* OR sunlamp* OR sunscreen* OR sunblock* OR solarium* OR solaria* OR uv OR uva OR uvb OR uvc OR ultraviolet OR "ultra-violet" OR tan OR tans OR tanning OR tanned OR spf) N5 (risk* OR benefit* OR protect* OR exposure* OR safe*) N5 (comply OR complies OR compliance OR adhere* OR adherence OR concordance OR accordance OR accept* OR motivation* OR awareness*))
11

- S66 AB((sun OR suns OR sunning OR sunshine OR sunlight* OR sunbath* OR suntan* OR sunbed* OR sunlamp* OR sunscreen* OR sunblock* OR solarium* OR solaria* OR uv OR uva OR uvb OR uvc OR ultraviolet OR "ultra-violet" OR tan OR tans OR tanning OR tanned OR spf) N5 (risk* OR benefit* OR protect* OR exposure* OR safe*) N5 (knowledg* OR attitude* OR behavio* OR value* OR understand* OR belief* OR believe OR perception* OR perceive* OR view OR views OR prefer* OR intention* OR habit* OR practice*))
335
- S65 TI((sun OR suns OR sunning OR sunshine OR sunlight* OR sunbath* OR suntan* OR sunbed* OR sunlamp* OR sunscreen* OR sunblock* OR solarium* OR solaria* OR uv OR uva OR uvb OR uvc OR ultraviolet OR "ultra-violet" OR tan OR tans OR tanning OR tanned OR spf) N5 (risk* OR benefit* OR protect* OR exposure* OR safe*) N5 (knowledg* OR attitude* OR behavio* OR value* OR understand* OR belief* OR believe OR perception* OR perceive* OR view OR views OR prefer* OR intention* OR habit* OR practice*))
171
- S64 TI(skincare* OR sunsafe* OR sunsmart* OR sunwise* OR "pool cool" OR kidskin OR "kid skin" OR slipsloplap OR "slip slop slap" OR shunburn OR "shun burn") OR AB(skincare* OR sunsafe* OR sunsmart* OR sunwise* OR "pool cool" OR kidskin OR "kid skin" OR slipsloplap OR "slip slop slap" OR shunburn OR "shun burn")
46
- S63 S13 AND S62
2,997
- S62 S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 OR S32 OR S33 OR S34 OR S35 OR S36 OR S37 OR S38 OR S39 OR S40 OR S41 OR S42 OR S43 OR S44 OR S45 OR S46 OR S47 OR S48 OR S49 OR S50 OR S51 OR S52 OR S53 OR S54 OR S55 OR S56 OR S57 OR S58 OR S59 OR S60 OR S61
907,994
- S61 (MH "Professional-Patient Relations+")
60,591
- S60 (MH "Behavioral Changes") OR (MH "Health Behavior") OR (MH "Patient Compliance+") OR (MH "Risk Taking Behavior")
70,006
- S59 (MH "Attitude") OR (MH "Attitude to Change") OR (MH "Attitude of Health Personnel+") OR (MH "Attitude to Health+") OR (MH "Attitude to Risk") OR (MH "Consumer Attitudes") OR (MH "Patient Attitudes") OR (MH "Social Attitudes")
178,631
- S58 (MM "Knowledge")
2,619
- S57 TI((lifestyle* OR behavior* OR behaviour*) N3 (change* OR changing OR modification* OR modify* OR modifies)) OR AB((lifestyle* OR behavior* OR behaviour*) N3 (change* OR changing OR modification* OR modify* OR modifies))
14,485
- S56 TI((uv OR "ultra-violet" OR ultraviolet) N4 (photo* OR photograph* OR image* OR imaging)) OR AB((uv OR "ultra-violet" OR ultraviolet) N4 (photo* OR photograph* OR image* OR imaging))
143
- S55 TI(appearance N3 (based OR focused OR orientated)) OR AB(appearance N3 (based OR focused OR orientated))
161

- S54 TI(media* N3 (coverage OR report* OR article* OR content* OR present* OR discuss* OR messag* OR campaign*)) OR AB(media* N3 (coverage OR report* OR article* OR content* OR present* OR discuss* OR messag* OR campaign*))
3,951
- S53 AB(phone* OR telephone* OR smartphone* OR email* OR "e mail" OR "electronic mail*" OR "text messag*" OR texting OR sms OR "short messag*" OR app OR apps OR android* OR blackberr* OR iphone* OR ipad* OR ehealth OR "e health" OR mhealth OR "m health" OR telehealth* OR "tele-health*")
21,642
- S52 TI(phone* OR telephone* OR smartphone* OR email* OR "e mail" OR "electronic mail*" OR "text messag*" OR texting OR sms OR "short messag*" OR app OR apps OR android* OR blackberr* OR iphone* OR ipad* OR ehealth OR "e health" OR mhealth OR "m health" OR telehealth* OR "tele-health*")
10,446
- S51 TI(web OR website* OR interactive OR "inter-active" OR facebook OR twitter OR youtube OR "you-tube" OR "mail* out*" OR mailout* OR "mail-shot*" OR mailshot* OR flyer*) OR AB(web OR website* OR interactive OR "inter-active" OR facebook OR twitter OR youtube OR "you-tube" OR "mail* out*" OR mailout* OR "mail-shot*" OR mailshot* OR flyer*)
38,238
- S50 AB("mass media*" OR "new media*" OR "national media*" OR "local media*" OR "regional media*" OR "social media*" OR "social network*" OR marketing OR marketed OR television* OR "tele-vision*" OR tv OR advert* OR billboard* OR "bill-board*" OR poster* OR cinema* OR video* OR newspaper* OR news OR magazine* OR journalis* OR comic* OR cartoon* OR leaflet* OR pamphlet* OR booklet* OR workbook* OR "work-book*" OR handbook* OR "hand-book*" OR radio OR radios OR internet OR multimedia OR "multi-media")
55,023
- S49 TI("mass media*" OR "new media*" OR "national media*" OR "local media*" OR "regional media*" OR "social media*" OR "social network*" OR marketing OR marketed OR television* OR "tele-vision*" OR tv OR advert* OR billboard* OR "bill-board*" OR poster* OR cinema* OR video* OR newspaper* OR news OR magazine* OR journalis* OR comic* OR cartoon* OR leaflet* OR pamphlet* OR booklet* OR workbook* OR "work-book*" OR handbook* OR "hand-book*" OR radio OR radios OR internet OR multimedia OR "multi-media")
79,055
- S48 TI((story OR stories OR narrative* OR testimon* OR "first person") NOT "narrative review*") OR AB((story OR stories OR narrative* OR testimon* OR "first person") NOT "narrative review*")
23,402
- S47 TI((data OR statistic* OR graph OR graphs OR numeric* OR verbal OR textual OR written) N3 (stimuli OR display* OR dissemin* OR presented OR presentation* OR communicat* OR message* OR advice OR feedback OR "feed back" OR inform OR information OR aid OR aids OR representation* OR material*))
1,361
- S46 TI((graphic* OR visual* OR pictorial OR illustra* OR print*) N3 (image* OR stimuli OR display* OR dissemin* OR present OR presented OR presentation* OR communicat* OR message* OR advice OR feedback OR "feed back" OR inform OR information OR aid OR aids OR representation* OR material*))
1,211
- S45 TI(pictogram* OR "picto-gram*" OR pictograph* OR "picto-graph*" OR infogram* OR "info-gram*" OR infographic* OR "info-graphic*") OR AB(pictogram* OR "picto-gram*" OR pictograph* OR "picto-graph*" OR infogram* OR "info-gram*" OR infographic* OR "info-graphic*")
95

- S44 TI((group OR peer) N2 (educat* OR support*)) OR AB((group OR peer) N2 (educat* OR support*))
7,104
- S43 TI((opinion OR education* OR influential) N1 leader*) OR AB((opinion OR education* OR influential) N1 leader*)
791
- S42 TI(coach* OR mentor* OR counsel* OR champion* OR “self-study” OR “self-guided”) OR AB(coach* OR mentor* OR counsel* OR champion* OR “self-study” OR “self-guided”)
38,568
- S41 TI((community OR consumer OR pressure) N1 (group* OR organi?ation*)) OR AB((community OR consumer OR pressure) N1 (group* OR organi?ation*))
3,376
- S40 AB((brief OR opportunist* OR concise OR short OR direct OR lifestyle OR written OR oral OR verbal OR personali?ed OR individuali?ed OR motivational) N2 (advice OR negotiation* OR guidance OR discussion* OR encouragement OR intervention* OR program* OR meeting* OR session* OR interview*))
9,446
- S39 TI((brief OR opportunist* OR concise OR short OR direct OR lifestyle OR written OR oral OR verbal OR personali?ed OR individuali?ed OR motivational) N2 (advice OR negotiation* OR guidance OR discussion* OR encouragement OR intervention* OR program* OR meeting* OR session* OR interview*))
3,825
- S38 AB(“health* worker*” OR “health-care worker*” OR “health* professional*” OR “health-care professional*” OR “health* personnel” OR “health-care personnel” OR “general-practitioner*” OR gp OR gps OR nurse* OR health visitor* OR midwife OR midwives OR clinician* OR pharmacist* OR “primary care” OR “general practice” OR “family doctor*” OR “family practi*” OR dermatologist* OR nutritionist*) N3 (led OR educat* OR train* OR teach* OR involv* OR intervention* OR program* OR session*))
34,345
- S37 TI(“health* worker*” OR “health-care worker*” OR “health* professional*” OR “health-care professional*” OR “health* personnel” OR “health-care personnel” OR “general-practitioner*” OR gp OR gps OR nurse* OR health visitor* OR midwife OR midwives OR clinician* OR pharmacist* OR “primary care” OR “general practice” OR “family doctor*” OR “family practi*” OR dermatologist* OR nutritionist*) N3 (led OR educat* OR train* OR teach* OR involv* OR intervention* OR program* OR session*))
16,814
- S36 AB((work OR workplace* OR employer* OR school* OR playschool* OR preschool* OR nursery OR nurseries OR kindergarten* OR creche* OR highschool* OR afterschool) N3 (led OR educat* OR train* OR teach* OR involv* OR intervention* OR program* OR session*))
17,868
- S35 TI((work OR workplace* OR employer* OR school* OR playschool* OR preschool* OR nursery OR nurseries OR kindergarten* OR creche* OR highschool* OR afterschool) N3 (led OR educat* OR train* OR teach* OR involv* OR intervention* OR program* OR session*))
7,802
- S34 AB(“work-based” OR “workplace-based” OR “worksite-based” OR “community-led” OR “community-based” OR “community-wide” OR “community-centred” OR “community-centered” OR “community-run” OR “community intervention*” OR “community program*” OR “community scheme*” OR “faith-based” OR “faith-led” OR “church-based” OR “church-led”)
13,218

- S33 TI("work-based" OR "workplace-based" OR "worksite-based" OR "community-led" OR "community-based" OR "community-wide" OR "community-centred" OR "community-centered" OR "community-run" OR "community intervention*" OR "community program*" OR "community scheme*" OR "faith-based" OR "faith-led" OR "church-based" OR "church-led")
6,755
- S32 AB((family OR families OR parent* OR "care-giver*" OR caregiver* OR carer OR carers OR guardian* OR wife OR wives OR husband OR husbands OR spouse* OR spousal OR partner OR partners OR mother* OR father* OR teacher*) N3 (led OR educat* OR train* OR teach OR teaches OR teaching OR taught OR involv* OR intervention* OR program* OR session*))
23,961
- S31 TI((family OR families OR parent* OR "care-giver*" OR caregiver* OR carer OR carers OR guardian* OR wife OR wives OR husband OR husbands OR spouse* OR spousal OR partner OR partners OR mother* OR father* OR teacher*) N3 (led OR educat* OR train* OR teach OR teaches OR teaching OR taught OR involv* OR intervention* OR program* OR session*))
8,498
- S30 TI(outreach OR "out reach") OR AB(outreach OR "out reach")
4,291
- S29 TI(behavi* N2 intervention*) OR AB(behavi* N2 intervention*)
4,645
- S28 TI(education* N2 (program* OR intervention* OR meeting* OR session* OR strateg* OR workshop* OR visit* OR material*)) OR AB(education* N2 (program* OR intervention* OR meeting* OR session* OR strateg* OR workshop* OR visit* OR material*))
28,569
- S27 TI((health* OR "health care" OR lifestyle* OR "life style*" OR consumer*) N2 (information OR message* OR communicat*)) OR AB((health* OR "health care" OR lifestyle* OR "life style*" OR consumer*) N2 (information OR message* OR communicat*))
15,716
- S26 TI((shared OR informed) N3 (decision* OR choice*)) OR AB((shared OR informed) N3 (decision* OR choice*))
4,414
- S25 TI("decision aid*" OR "decision tool*" OR "decision support*") OR AB("decision aid*" OR "decision tool*" OR "decision support*")
3,070
- S24 TI((cognitive OR cognition OR associative OR affective OR positiv* OR negativ*) N3 message*) OR AB((cognitive OR cognition OR associative OR affective OR positiv* OR negativ*) N3 message*)
290
- S23 TI((tailor* OR personal* OR individual* OR targeted OR targeting) N3 (message* OR material* OR communica* OR feedback OR "feed back" OR promot* OR market* OR campaign*)) OR AB((tailor* OR personal* OR individual* OR targeted OR targeting) N3 (message* OR material* OR communica* OR feedback OR "feed back" OR promot* OR market* OR campaign*))
4,932
- S22 TI((risk* OR probabilit* OR uncertain*) N3 (notif* OR inform* OR message* OR communicat* OR marketing OR campaign* OR publiciz* OR publicis* OR publicity OR advice OR advise* OR advising OR perceive* OR perception*)) OR AB((risk* OR probabilit* OR uncertain*) N3 (notif* OR inform* OR message* OR communicat* OR marketing OR campaign* OR publiciz* OR publicis* OR publicity OR advice OR advise* OR advising OR perceive* OR perception*))
8,378

- S21 TI((risk* OR probabilit* OR uncertain* OR message* OR communicat* OR marketing OR advice OR advise* OR advising OR appeal* OR loss OR gain OR positive* OR negative*) N3 (frame OR framed OR framing)) OR AB((risk* OR probabilit* OR uncertain* OR message* OR communicat* OR marketing OR advice OR advise* OR advising OR appeal* OR loss OR gain OR positive* OR negative*) N3 (frame OR framed OR framing))
357
- S20 JN "health communication" OR "journal of health communication"
1,398
- S19 (MH "Counseling") OR (MH "Peer Counseling") OR (MH "Motivational Interviewing")
19,298
- S18 (MH "Marketing+")
19,330
- S17 (MH "Student Health Education") OR (MH "School Health Education") OR (MH "Patient Education") OR (MH "Health Education") OR (MH "Parenting Education") OR (MH "Health Fairs") OR (MH "Education, Nonprofessional")
68,995
- S16 (MH "Health Promotion")
35,236
- S15 (MH "Communications Media+")
338,714
- S14 (MH "Communication") OR (MH "Communication Barriers") OR (MH "Social Networking")
45,118
- S13 S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12
22,308
- S12 TI(melanoma* OR "basal cell carcinoma*" OR "squamous cell carcinoma*")
9,790
- S11 TI((skin OR skins) N3 (cancer* OR neoplasm* OR tumor* OR tumour* OR carcinoma* OR malignan*))
1,506
- S10 TI(vitaminD* OR "vitamin D" OR cholecalciferol* OR colecalciferol* OR ergocalciferol* OR calciferol* OR alfacalcidol* OR osteomalacia OR rickets OR "hypovitaminosis D")
5,776
- S9 (MH "Vitamin D Deficiency+/ED/PC/PF")
480
- S8 (MH "Melanoma+/ED/PF/PC")
664
- S7 (MH "Skin Neoplasms+/ED/PC/PF")
1,554
- S6 TI(sunbath* OR "sun-bath*" OR suntan* OR tan OR tans OR tanning OR tanned OR sunbed* OR "sun-bed*" OR sunlamp* OR "sun-lamp*" OR solarium* OR solaria*) OR AB(sunbath* OR "sun-bath*" OR suntan* OR tan OR tans OR tanning OR tanned OR sunbed* OR "sun-bed*" OR sunlamp* OR "sun-lamp*" OR solarium* OR solaria*)
819
- S5 TI(sunscreen* OR "sun-screen*" OR sunblock* OR "sun-block*" OR spf OR sunburn* OR "sun-burn*" OR "photo-damag*" OR "photodamag*" OR "photoag*" OR "photo-ag*" OR "photo-expos*" OR photoexpos*) OR AB(sunscreen* OR "sun-screen*" OR sunblock* OR "sun-block*" OR spf OR sunburn* OR "sun-burn*" OR "photo-damag*" OR "photodamag*" OR "photoag*" OR "photo-ag*" OR "photo-expos*" OR photoexpos*)
1,093

- S4 AB((uv OR uva OR uvb OR uvc OR "ultra-violet" OR ultraviolet OR solar) N3 (ray* OR radiation OR irradiat* OR damag* OR protect* OR safe OR safety OR risk* OR benefit* OR beneficial OR index OR indexes OR exposure* OR overexposure* OR expose* OR overexpose*))
796
- S3 TI((uv OR uva OR uvb OR uvc OR "ultra-violet" OR ultraviolet OR solar) N3 (ray* OR radiation OR irradiat* OR damag* OR protect* OR safe OR safety OR risk* OR benefit* OR beneficial OR index OR indexes OR exposure* OR overexposure* OR expose* OR overexpose*))
398
- S2 TI((sun OR suns OR sunning OR sunshine OR sunlight*) N3 (damag* OR protect* OR safe OR safety OR risk* OR benefit* OR beneficial OR index OR indexes OR exposure* OR overexposure* OR expose* OR overexpose* OR underexpose* OR underexposure*)) OR AB((sun OR suns OR sunning OR sunshine OR sunlight*) N3 (damag* OR protect* OR safe OR safety OR risk* OR benefit* OR beneficial OR index OR indexes OR exposure* OR overexposure* OR expose* OR overexpose* OR underexpose* OR underexposure*))
1,492
- S1 (MH "Sunlight+") OR (MH "Sunburn+") OR (MH "Sunscreening Agents")
5204

Database name	Cost Effectiveness Analysis (CEA) Registry
Database host	EBSCO Host
Database coverage dates	1937-2014
Searcher	Hannah Wood
Search date	07/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	2
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	2
Reference numbers of records in EndNote library	1229-12230
Number of records after de-duplication in EndNote library	1

CEA (basic, non-subscription access) only allows one search term to be entered at a time and there are no options to export search results. Returned records were screened in the database and only those about public health interventions, risk communication or attitudes, knowledge or understanding of sun exposure were added to EndNote. Records for studies of clinical interventions were not added to EndNote. Potentially relevant records were not added to EndNote if the citation had been identified by another database and previously downloaded.

sun = 49 results.

48 records of clearly irrelevant clinical interventions (drugs or screening methods), 1 potentially relevant record with citation already in EndNote. 0 records added to EndNote.

sunlight = 0 results

sunshine = 1 result.

1 record of clearly irrelevant clinical intervention (drugs or screening methods), 0 records added to EndNote.

sunning = 1 result

1 record of clearly irrelevant clinical intervention (drugs or screening methods), 0 records added to EndNote.

ultraviolet = 2 results

2 records of clearly irrelevant clinical intervention (drugs or screening methods), 0 records added to EndNote.

sunscreen = 1 result.

1 potentially relevant record with citation already in EndNote. 0 records added to EndNote.

sunblock = 0 results.

spf = 0 results.

sunburn = 0 results.

photo = 51 results.

51 records of clearly irrelevant clinical interventions (drugs or screening methods). 0 records added to EndNote.

photodamage =0 results

photoaging = 0 results

photoexposure = 0 results

sunbathe =0 results

sunbathing = 0 results

suntan = 0 results

sunbed = 0 results

tanning = 0 results

solarium = 0 results

solaria = 0 results

skin = 51 results

50 records of clearly irrelevant clinical interventions (drugs or screening methods), 1 potentially relevant record with citation already in EndNote. 0 records added to EndNote.

melanoma = 13 results

9 records of clearly irrelevant clinical interventions (drugs or screening methods), 2 potentially relevant record with citation already in EndNote. 2 records added to EndNote.

rickets = 0 results

vitamin d = 19 results

19 records of clearly irrelevant clinical interventions (drugs or screening methods), 0 records added to EndNote.

Skinsafe = 0 results

SunSAFE= 0 results

SunSmart= 0 results

Sunwise = 0 results

KidSkin= 0 results

Shunburn= 0 results

Poolcool= 0 results

Database name	Social Care Online
Database host	http://www.scie-socialcareonline.org.uk/ (Advanced search BETA site)
Database coverage dates	1980s to current
Searcher	Hannah Wood
Search date	10/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	56
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	41 (15 direct to duplicate library)
Reference numbers of records in EndNote library	13015-13055
Number of records after de-duplication in EndNote library	40

Advanced search:

sun OR sunlight OR sunshine OR sunburn* OR sunscreen* OR suntan* OR sunbed* OR uv OR uva OR uvb OR spf OR tan OR tanning OR sunning OR ultraviolet OR sunblock OR solarium OR solaria

Search title field – 15 records

Search abstract field – 25 records

rickets OR "vitamin d" OR "skin cancer" OR "skin cancers" OR melanoma* OR "skin safe" OR skinsafe OR sunsmart OR sunwise OR kidskin OR "kid skin" OR shunburn OR "shun burn" OR poolcool OR "pool cool"

Search title field – 4 records

Search abstract field – 12 records

Database name	HEED
Database host	EBSCO Host
Database coverage dates	1983-2014
Searcher	Hannah Wood
Search date	14/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	297
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	291 (8 direct to Duplicate library)
Reference numbers of records in EndNote library	15039-15329
Number of records after de-duplication in EndNote library	206

#	Query Limiters/Expanders	Last Run Via	Results
S12	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10	Limiters - Published Date: 19940101-20141231	297
S11	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10	Database - HEED: Health Economic Evaluations Database	312
S10	TX(skinsafe* OR sunsafe* OR sunsmart* OR sunwise* OR "pool cool" OR kidskin OR "kid skin" OR slipslopslap OR "slip slop slap" OR shunburn OR "shun burn")	Database - HEED: Health Economic Evaluations Database	2
S9	TI(melanoma* OR "basal cell carcinoma*" OR "squamous cell carcinoma*")	Database - HEED: Health Economic Evaluations Database	104
S8	TI((skin OR skins) N3 (cancer* OR neoplasm* OR tumor* OR tumour* OR carcinoma* OR malignan*))	Database - HEED: Health Economic Evaluations Database	27
S7	TI(vitaminD* OR "vitamin D" OR cholecalciferol* OR colecalciferol* OR ergocalciferol* OR calciferol* OR alfacalcidol* OR osteomalacia OR rickets OR "hypovitaminosis D")	Database - HEED: Health Economic Evaluations Database	33
S6	TX(sunbath* OR "sun-bath*" OR suntan* OR tan OR tans OR tanning OR tanned OR sunbed* OR "sun-bed*" OR sunlamp* OR "sun-lamp*" OR solarium* OR solaria*)	Database - HEED: Health Economic Evaluations Database	123
S5	TX(sunscreen* OR "sun-screen*" OR sunblock* OR "sun-block*" OR spf OR sunburn* OR "sun-burn*" OR "photo-damag*" OR "photodamag*" OR "photoag*" OR "photo-ag*" OR "photo-expos*" OR photoexpos*)	Database - HEED: Health Economic Evaluations Database	11
S4	TX((uv OR uva OR uvb OR uvc OR "ultra-violet" OR ultraviolet OR solar) N3 (ray* OR radiation OR irradiat* OR damag* OR protect* OR safe OR safety OR risk* OR benefit* OR beneficial OR index OR indexes OR exposure* OR overexposure* OR expose* OR overexpose*))	Database - HEED: Health Economic Evaluations Database	11
S3	TX((sun OR suns OR sunning OR sunshine OR sunlight*) N3 (damag* OR protect* OR safe OR safety OR risk* OR benefit* OR beneficial OR index OR indexes OR exposure* OR overexposure* OR expose* OR overexpose* OR underexpose* OR underexposure*))	Database - HEED: Health Economic Evaluations Database	8
S2	(ZW "melanoma") OR (ZW "cancer - skin") OR (ZW "vitamin deficiency")	Database - HEED: Health Economic Evaluations Database	77
S1	(ZE "sunlight adverse effects") OR (ZE "sunscreening agents economics") OR (ZE "sunscreening agents therapeutic use") OR (ZE "ultraviolet rays adverse effects")	Database - HEED: Health Economic Evaluations Database	8

Database name	Applied Social Sciences Index and Abstracts (ASSIA)
Database host	Proquest
Database coverage dates	1987-current
Searcher	Hannah Wood
Search date	19/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	964
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	195 (769 direct to Duplicate Library)
Reference numbers of records in EndNote library	15330-15524
Number of records after de-duplication in EndNote library	106

Problem with Proquest interface meant that it was not possible to undertake complex multi-line searches; the database kept timing out. This was confirmed as a known issue with Proquest support. Basic searches undertaken, downloaded one search-line at a time as the interface crashed when trying to combine lines with OR.

SU.EXACT(EXPLODE("Sunscreens") OR SU.EXACT("Sunbeds") OR SU.EXACT("Sunburn") OR SU.EXACT("Sunbathing") OR SU.EXACT("Sunlight") OR SU.EXACT("Suntan"))Limits applied

Databases:

Applied Social Sciences Index and Abstracts (ASSIA)

Narrowed by: Year: 1994; 1995; 1996; 1997; 1998; 1999; 2000; 2001; 2002; 2003; 2004; 2005; 2006; 2007; 2008; 2009; 2010; 2011; 2012; 2013; 2014

Applied Social Sciences Index and Abstracts (ASSIA) 235°

TI,AB((sun OR suns OR sunning OR sunshine OR sunlight*) N/3 (damag* OR protect* OR safe OR safety OR risk* OR benefit* OR beneficial OR index OR indexes OR exposure* OR overexposure* OR expose* OR overexpose* OR underexpose* OR underexposure*))Limits applied

Databases:

Applied Social Sciences Index and Abstracts (ASSIA)

Narrowed by: Year: 1994; 1995; 1996; 1997; 1998; 1999; 2000; 2001; 2002; 2003; 2004; 2005; 2006; 2007; 2008; 2009; 2010; 2011; 2012; 2013; 2014

Applied Social Sciences Index and Abstracts (ASSIA) 277

TI,AB((uv OR uva OR uvb OR uvc OR "ultra-violet" OR ultraviolet OR solar) N/3 (ray* OR radiation OR irradiat* OR damag* OR protect* OR safe OR safety OR risk* OR benefit* OR beneficial OR index OR indexes OR exposure* OR overexposure* OR expose* OR overexpose*))Limits applied

Databases:

Applied Social Sciences Index and Abstracts (ASSIA)

Narrowed by: Year: 1994; 1995; 1996; 1997; 1998; 1999; 2000; 2001; 2002; 2003; 2004; 2005; 2006; 2007; 2008; 2009; 2010; 2011; 2012; 2013; 2014

Applied Social Sciences Index and Abstracts (ASSIA) 96

TI,AB(sunscreen* OR "sun-screen*" OR sunblock* OR "sun-block*" OR spf OR sunburn* OR "sun-burn*")Limits applied

Databases:

Applied Social Sciences Index and Abstracts (ASSIA)

Narrowed by: Year: 1994; 1995; 1996; 1997; 1998; 1999; 2000; 2001; 2002; 2003; 2004; 2005; 2006; 2007; 2008; 2009; 2010; 2011; 2012; 2013; 2014

Applied Social Sciences Index and Abstracts (ASSIA) 144°

TI,AB(sunbath* OR "sun-bath*" OR suntan* OR tan OR tans OR tanning OR tanned)Limits applied

Databases:

Applied Social Sciences Index and Abstracts (ASSIA)

Narrowed by: Year: 1994; 1995; 1996; 1997; 1999; 2000; 2001; 2003; 2004; 2005; 2006; 2007; 2008; 2009; 2010; 2011; 2012; 2013; 2014 - 155

TI,AB("photo-damag*" OR "photodamag*" OR "photoag*" OR "photo-ag*" OR "photo-expos*" OR photoexpos*) Limits applied

Databases:

Applied Social Sciences Index and Abstracts (ASSIA)

Narrowed by: Year: 1994; 1995; 1996; 1997; 1999; 2000; 2001; 2003; 2004; 2005; 2006; 2007; 2008; 2009; 2010; 2011; 2012; 2013; 2014

Applied Social Sciences Index and Abstracts (ASSIA) 10

TI,AB(kidskin OR "kid skin" OR slipslopslap OR "slip slop slap" OR shunburn OR "shun burn") Limits applied

Databases:

Applied Social Sciences Index and Abstracts (ASSIA)

Narrowed by: Year: 1994; 1995; 1996; 1997; 1999; 2000; 2001; 2003; 2004; 2005; 2006; 2007; 2008; 2009; 2010; 2011; 2012; 2013; 2014

Applied Social Sciences Index and Abstracts (ASSIA) 2

TI,AB(skinsafe OR sunsafe OR sunsmart OR sunwise OR "pool cool") Limits applied

Databases:

Applied Social Sciences Index and Abstracts (ASSIA)

Narrowed by: Year: 1994; 1995; 1996; 1997; 1999; 2000; 2001; 2003; 2004; 2005; 2006; 2007; 2008; 2009; 2010; 2011; 2012; 2013; 2014

Applied Social Sciences Index and Abstracts (ASSIA) 20

TI,AB(sunbed* OR "sun-bed*" OR sunlamp* OR "sun-lamp*" OR solarium* OR solaria*)Limits applied

Databases:

Applied Social Sciences Index and Abstracts (ASSIA)

Narrowed by: Year: 1994; 1995; 1996; 1997; 1999; 2000; 2001; 2003; 2004; 2005; 2006; 2007; 2008; 2009; 2010; 2011; 2012; 2013; 2014

Applied Social Sciences Index and Abstracts (ASSIA) 25

Database name	Guidelines International Network (GIN)
Database host	http://www.g-i-n.net/library/
Database coverage dates	Not found
Searcher	Hannah Wood
Search date	21/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	17
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	17
Reference numbers of records in EndNote library	16806-16822
Number of records after de-duplication in EndNote library	17

International Guideline Library Advanced Search.

Search English language only, all authors, all publication status, all publication types, all countries.

sun*= 9 records. 7 clearly irrelevant (clinical interventions/diagnostics), 1 record referring to current project, 1 potentially relevant record added to EndNote.

ultra-violet OR ultraviolet= 2 records, both clearly irrelevant (clinical interventions/diagnostics), 0 potentially relevant records added to EndNote.

spf = 0 records.

photo* = 12 records, all clearly irrelevant (clinical interventions/diagnostics), 0 potentially relevant records added to EndNote.

tan*=1 record, clearly irrelevant (clinical interventions/diagnostics), 0 potentially relevant records added to EndNote

solarium = 0 records

solaria = 0 records

skin cancer* OR melanoma = 51 records. 49 records of clearly irrelevant clinical interventions (drugs or screening methods), 1 potentially relevant record with citation already in EndNote, 1 record of relevant NICE guidance yielding 15 additional evidence papers. 15 records added to EndNote.

ricketts OR vitamin d = 7 records. 5 records of clearly irrelevant clinical interventions (drugs or screening methods), 1 record for guideline in-process with no available outputs, 1 record added to EndNote.

Database name	National Guidelines Clearing House
Database host	http://www.guideline.gov/
Database coverage dates	Not found
Searcher	Hannah Wood
Search date	21/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	1
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	1
Reference numbers of records in EndNote library	16823
Number of records after de-duplication in EndNote library	1

Search: sun or suns or sunning or sunshine or sunlight. 65 results. 63 records of clearly irrelevant clinical interventions (drugs or screening methods), 2 potentially relevant records with citations already in EndNote, 0 records added to EndNote.

Search: uv or uva or uvb or ultraviolet. 38 results. 36 records of clearly irrelevant clinical interventions (drugs or screening methods), 1 potentially relevant record with citation already in EndNote, 1 record added to EndNote.

Search: sunscreen* or sunblock* or spf or sunburn* 16 results. 14 records of clearly irrelevant clinical interventions (drugs or screening methods), 2 potentially relevant records with citation already in EndNote, 0 records added to EndNote.

Search: sunbath* or suntan* or tanning or sunbed* or sunlamp* or solarium* or solaria*. 77 results. 76 records of clearly irrelevant clinical interventions (drugs or screening methods), 1 potentially relevant record with citation already in EndNote, 0 records added to EndNote.

As this resource searches the full text of guidelines it was not necessary to search using the vitamin d deficiency or skin cancer terms. We are only interested in interventions to prevent these conditions that mention sun or uv exposure; these are captured by the terms above.

Database name	Public Health Observatories webpages
Database host	http://www.apho.org.uk/
Database coverage dates	Up to April 2013 when PHO became part of Public Health England.
Searcher	Hannah Wood
Search date	21/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	7
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	7
Reference numbers of records in EndNote library	16824-16830
Number of records after de-duplication in EndNote library	7

Browsed "Publications", "Tools & Data" and "Work Streams" sections of the webpages.

Searched using "Advanced search" function. Limit 1994-2014. Note that search engine finds any occurrence of term, even within words, making truncation unnecessary. Sun will find sunburn, sunscreen, sunlight etc. as well as irrelevant terms like Sunderland. No Boolean OR available.

Returned results of each search were scanned for potentially relevant items. Choice of items to view and selection for further consideration was based on the searchers judgement.

sun-sunderland: 47 reports, 5 collections. 7 records selected and added to EndNote.

ultraviolet: 3 records, 0 added to EndNote

ultra-violet: 4 records, 0 added to EndNote

tanning: 7 records, 0 added to EndNote

Database name	The Trials Register of Promoting Health Interventions (TRoPHI)
Database host	EPPI Centre Database (https://eppi.ioe.ac.uk/webdatabases/Intro.aspx?ID=5)
Database coverage dates	Information not found. States: "Quarterly sensitive searches since August 2004"
Searcher	Hannah Wood
Search date	21/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	4
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	4
Reference numbers of records in EndNote library	16831-16834
Number of records after de-duplication in EndNote library	4

- 1 Freetext: "sun" OR "suns" OR "sunning" OR "sunshine" OR "sunlight" 102
- 2 Freetext: "uv" OR "uva" OR "uva" OR "uvb" OR "ultraviolet" OR "ultra violet" 20
- 3 Freetext: "sunscreen*" OR "sunblock*" OR "sunburn*" OR "spf" 43
- 4 Freetext: "sunbath*" OR "suntan*" OR "tan" OR "tans" OR "tanning" OR "tanned" OR "sunbed*" OR "sunlamp*" OR "solarium" OR "solaria" 30
- 5 Freetext: "kid skin" OR "kidskin" OR "slipslapslop" OR "slip slap slop" OR "shunburn" OR "shun burn" 2
- 6 Freetext: "skinsafe" OR "sunsafe" OR "sunsmart" OR "sunwise" OR "pool cool" 6
- 7 1 OR 2 OR 3 OR 4 OR 5 OR 6 221

No export options – records screened in database to remove obviously irrelevant records. Records only added to EndNote if the record had not already been found by a previous search resource.

16 records clearly irrelevant, 101 records already identified and in EndNote, 4 new records added to EndNote

Database name	Database of promoting health effectiveness reviews (DoPHER)
Database host	EPPI Centre Database (https://eppi.ioe.ac.uk/webdatabases/Intro.aspx?ID=2)
Database coverage dates	Information not found. States "Since January 2006 DoPHER is updated quarterly to keep it as current as possible."
Searcher	Hannah Wood
Search date	21/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	1
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	1
Reference numbers of records in EndNote library	16835
Number of records after de-duplication in EndNote library	1

- 1 Freetext: "sun" OR "suns" OR "sunning" OR "sunshine" OR "sunlight" 21
- 2 Freetext: "uv" OR "uva" OR "uva" OR "uvb" OR "ultraviolet" OR "ultra violet" 9
- 3 Freetext: "sunscreen*" OR "sunblock*" OR "sunburn*" OR "spf" 6
- 4 Freetext: "sunbath*" OR "suntan*" OR "tan" OR "tans" OR "tanning" OR "tanned" OR "sunbed*" OR "sunlamp*" OR "solarium" OR "solaria" 2
- 5 Freetext: "kid skin" OR "kidskin" OR "slipslapslop" OR "slip slap slop" OR "shunburn" OR "shun burn" 0
- 6 Freetext: "skinsafe" OR "sunsafe" OR "sunsmart" OR "sunwise" OR "pool cool" 0
- 7 1 OR 2 OR 3 OR 4 OR 5 OR 6 26

No export options – records screened in database to remove obviously irrelevant records. Records only added to EndNote if the record had not already been found by a previous search resource.

2 records clearly irrelevant, 23 records already identified and in EndNote, 1 new record added to EndNote

Database name	NICE webpages
Database host	http://www.nice.org.uk/
Database coverage dates	Information not found.
Searcher	Hannah Wood
Search date	24/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	4
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	4
Reference numbers of records in EndNote library	16836-16839
Number of records after de-duplication in EndNote library	4

Browsed public health guidance.

Searched whole website using the following terms:

Sun
Sunlight
Sunning
Sunshine
UV
UVA
UVB
Ultraviolet
Ultra violet
Sunscreen
Sunblock
Sunburn
SPF
Sunbathe
Suntan
Tan
Tanning
Sunbed
Sunlamp
Solarium
Solaria

Returned results of each search were scanned for potentially relevant items. Choice of items to view and selection for further consideration was based on the searchers judgement.

Records only added to EndNote if the record had not already been found by a previous search resource.

4 new records added to EndNote

Database name	NHS Evidence
Database host	https://www.evidence.nhs.uk/
Database coverage dates	Information not found.
Searcher	Hannah Wood
Search date	24/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	7
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	7
Reference numbers of records in EndNote library	16840-16846
Number of records after de-duplication in EndNote library	7

NICE Evidence does not provide the functionality to undertake a sufficiently precise search (for example it is not possible to specify the field to be searched, resulting in the retrieval of lots of records where the authors are Sun or Tan). In order to ensure the volume of records were manageable, and that the proportion of obviously irrelevant results were not overwhelming, a very pragmatic approach was taken.

For each search, the first 200 'most relevant' returned results of each search were scanned for potentially relevant items. Relevance ranking was determined by the Google algorithm. Choice of items to view and selection for further consideration was based on the searchers judgement. Records were only added to EndNote if the record had not already been found by a previous search resource.

(sun OR suns OR sunning OR sunshine OR sunlight OR sunbath* OR suntan* OR sunbed* OR sunlamp* OR sunscreen* OR sunblock* OR solarium* OR solaria* OR uv OR uva OR uvb OR uvc OR ultraviolet OR ultra-violet OR tan OR tans OR tanning OR tanned OR spf) AND (risk* OR benefit* OR protect* OR exposure* OR safe*) AND (knowledg* OR attitude* OR behavio* OR value* OR understand* OR belief* OR believe OR perception* OR perceive* OR view OR views OR prefer* OR intention* OR habit* OR practice* OR comply OR complies OR compliance OR adhere* OR adherence OR concordance OR accordance OR accept* OR motivation* OR awareness* OR uptake OR up-take OR takeup OR take-up OR barrier* OR facilitator* OR utilis* OR utiliz*) Filtered using the "Areas of Interest Option" - Public Health. 1224 records. 200 records screened, 4 new potentially relevant records added to EndNote.

(sun OR suns OR sunning OR sunshine OR sunlight OR sunbath* OR suntan* OR sunbed* OR sunlamp* OR sunscreen* OR sunblock* OR solarium* OR solaria* OR uv OR uva OR uvb OR uvc OR ultraviolet OR ultra-violet OR tan OR tans OR tanning OR tanned OR spf) AND (risk* OR benefit* OR protect* OR exposure* OR safe*) AND (notif* OR information OR message* OR communicat* OR counsel* OR marketing OR dissemin* OR advice OR advise* OR advising OR promot*) Filtered using the "Areas of Interest Option" - Public Health. 1250 records. 200 records screened, 0 new potentially records added to EndNote.

skinsafe OR unsafe OR sunsmart OR sunwise OR "pool cool" OR kidskin OR "kid skin" OR slipslopslap OR "slip slop slap" OR shunburn OR "shun burn" 47 records. 47 records screened. 1 new potentially record added to EndNote.

Database name	OAISTER
Database host	WorldCat (http://oaister.worldcat.org/)
Database coverage dates	Information not found.
Searcher	Hannah Wood
Search date	24/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	319
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	302 (17 direct to Duplicate Library)
Reference numbers of records in EndNote library	16847-17148
Number of records after de-duplication in EndNote library	290

'kw:skinsafe OR sunsafe OR sunsmart OR sunwise OR "pool cool" OR kidskin OR "kid skin" OR slipslopslap OR "slip slop slap" OR shunburn OR "shun burn" > '1994..2014' > 'English' 6 results

'kw:(sun OR suns OR sunning OR sunshine OR sunlight OR sunbath* OR suntan* OR sunbed* OR sunlamp* OR sunscreen* OR sunblock* OR solarium* OR solaria* OR uv OR uva OR uvb OR uvc OR ultraviolet OR ultra-violet OR tan OR tans OR tanning OR tanned OR spf) AND (risk* OR benefit* OR protect* OR exposure* OR safe*) AND (notif* OR information OR message* OR communicat* OR counsel* OR marketing OR dissemin* OR advice OR advise* OR advising OR promot*) > '1994..2014' > 'English' 247 results

'kw:(sun OR suns OR sunning OR sunshine OR sunlight OR sunbath* OR suntan* OR sunbed* OR sunlamp* OR sunscreen* OR sunblock* OR solarium* OR solaria* OR uv OR uva OR uvb OR uvc OR ultraviolet OR ultra-violet OR tan OR tans OR tanning OR tanned OR spf) AND (risk* OR benefit* OR protect* OR exposure* OR safe*) AND (knowledg* OR attitude* OR behavio* OR value* OR understand* OR belief* OR believe OR perception* OR perceive* OR view OR views OR prefer* OR intention* OR habit* OR practice* OR comply OR complies OR compliance OR adhere* OR adherence OR concordance OR accordance OR accept* OR motivation* OR awareness* OR uptake OR up-take OR takeup OR take-up OR barrier* OR facilitator* OR utilis* OR utiliz*) > '1994..2014' > 'English' 87 results

Total: 319 records once individual search lines deduplicated in OAISTER

Database name	OpenGrey
Database host	http://www.opengrey.eu/
Database coverage dates	Information not found.
Searcher	Hannah Wood
Search date	24/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	6
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	6
Reference numbers of records in EndNote library	17149-17154
Number of records after de-duplication in EndNote library	6

+skinsafe OR +sunsafe OR +sunsmart OR +sunwise OR "pool cool" OR +kidskin OR "kid skin" OR +slipslopslap OR "slip slop slap" OR +shunburn OR "shun burn" 0 results

(+sun OR +suns OR +sunning OR +sunshine OR +sunlight OR sunbath* OR suntan* OR sunbed* OR sunlamp* OR sunscreen* OR sunblock* OR solarium* OR solaria* OR +uv OR +uva OR +uvb OR +uvc OR ultraviolet OR ultra-violet OR +tan OR +tans OR +tanning OR +tanned OR +spf) NEAR/5 (risk* OR benefit* OR protect* OR exposure* OR safe*) NEAR/5 (notif* OR +information OR message* OR communicat* OR counsel* OR +marketing OR dissemin* OR +advice OR advise* OR +advising OR promot*) 1 result

(+sun OR +suns OR +sunning OR +sunshine OR +sunlight OR sunbath* OR suntan* OR sunbed* OR sunlamp* OR sunscreen* OR sunblock* OR solarium* OR solaria* OR +uv OR +uva OR +uvb OR +uvc OR ultraviolet OR ultra-violet OR +tan OR +tans OR +tanning OR +tanned OR +spf) NEAR/5 (risk* OR benefit* OR protect* OR exposure* OR safe*) NEAR/5 (knowledg* OR attitude* OR behavio* OR value* OR understand* OR belief* OR +believe OR perception* OR perceive* OR +view OR +views OR prefer* OR intention* OR habit* OR practice* OR +comply OR +complies OR +compliance OR adhere* OR +adherence OR +concordance OR +accordance OR accept* OR motivation* OR awareness* OR +uptake OR +up-take OR +takeup OR +take-up OR barrier* OR facilitator* OR utilis* OR utiliz*) 5 results

WHOLIS – constant error message – last checked 10/04/14

“The OPAC is currently unavailable. Please try again later”

<http://www.who.int/library/databases/en/>

Database name	Google
Database host	www.google.co.uk
Database coverage dates	Information not found.
Searcher	Hannah Wood
Search date	24/03/14
Search strategy checked by	Mick Arber (information specialist YHEC)
Number of records retrieved	26
Name of EndNote library	NICE sun Review 2 and 3.enl
Number of records loaded into EndNote	26
Reference numbers of records in EndNote library	17155-17180
Number of records after de-duplication in EndNote library	26

For each search, the first 100 ‘most relevant’ returned results (ten pages) of each search were scanned for potentially relevant items. Relevance ranking was determined by the Google algorithm. Choice of items to view and selection for further consideration was based on the searchers judgement. Records were only added to EndNote if the record had not already been found by a previous search resource.

Given the volume of material the searches were restricted to 2009 to current (the date of the previous NICE public health guidance on skin cancer prevention). This ensures that the most recent results are identified.

Note: when search is limited by date, Google does not provide information on the number of records returned.

site:.gov.uk skinsafe OR sunsafe OR sunsmart OR sunwise OR “pool cool” OR kidskin OR “kid skin” OR slipslopslap OR “slip slop slap” OR shunburn OR “shun burn” 26 records added to EndNote

site:.nhs.uk skinsafe OR sunsafe OR sunsmart OR sunwise OR “pool cool” OR kidskin OR “kid skin” OR slipslopslap OR “slip slop slap” OR shunburn OR “shun burn” 0 records added to EndNote

site:.apho.org.uk skinsafe OR sunsafe OR sunsmart OR sunwise OR “pool cool” OR kidskin OR “kid skin” OR slipslopslap OR “slip slop slap” OR shunburn OR “shun burn” 0 records added to EndNote

site:.gov.uk sun OR suns OR sunshine OR sunlight OR sunbath OR sunbathe OR sunbathing OR suntan OR sunbed OR sunlamp OR sunscreen OR sunblock OR solarium OR solaria OR uv OR uva OR uvb OR uvc OR ultraviolet OR ultra-violet OR tan OR tans OR tanning OR tanned OR spf 0 records added to EndNote

site:.nhs.uk sun OR suns OR sunshine OR sunlight OR sunbath OR sunbathe OR sunbathing OR suntan OR sunbed OR sunlamp OR sunscreen OR sunblock OR solarium OR solaria OR uv OR uva OR uvb OR uvc OR ultraviolet OR ultra-violet OR tan OR tans OR tanning OR tanned OR spf 0 records added to EndNote

site:.apho.org.uk sun OR suns OR sunshine OR sunlight OR sunbath OR sunbathe OR sunbathing OR suntan OR sunbed OR sunlamp OR sunscreen OR sunblock OR solarium OR solaria OR uv OR uva OR uvb OR uvc OR ultraviolet OR ultra-violet OR tan OR tans OR tanning OR tanned OR spf 0 records added to EndNote

The following webpages were also browsed for additional evidence on 25/03/14 identifying 21 records which were added to EndNote:

British Association of Dermatologists

<http://www.bad.org.uk/>

British Association of Skin Cancer Specialist Nurses

<http://bascsn.org/>

Cancer Research UK AND SunSmart

<http://www.cancerresearchuk.org/>, <http://www.sunsmart.org.uk/>

SunSmart team emailed for full sun smart publications 3rd April 2014. No reply received.

Good morning,

York Health Economics Consortium has been commissioned by the National Institute for Health and Care Excellence (NICE) to produce a number of evidence reviews and economic modelling to inform the development of public health guidance titled "Sunlight exposure: communicating the benefits and risks of ultraviolet light to the general public" (<http://guidance.nice.org.uk/PHG/77>). We understand that Cancer Research UK is one of the registered stakeholders for this work.

One of the evidence reviews we are working on is concerned with the public's attitudes, knowledge and beliefs about sunlight exposure; and therefore the qualitative research undertaken by SunSmart described on your webpages (<http://sunsmart.org.uk/sunsmart-resources/Campaignresearch/>) will be extremely relevant.

We note that only the research summaries of this work are available to download. We would be extremely grateful if you could supply the full reports for inclusion in our review, or point us in the direction of any published outputs (journal articles etc.).

Please do let me know if you have any questions about this project

Many thanks,

Hannah

Karen Clifford Skin Cancer Charity

<http://www.skcin.org/>

Teenage Cancer Trust

<http://www.teenagecancertrust.org>

ShunBurn team emailed for full details of ShunBurn Survey on attitudes to sun exposure 3rd April 2014. We were unable to access any information beyond a press release.

Hi Hannah,

I have attached our **Shunburn** press release that my Comms team have sent to me. Please let me know if you need further info.

Best wishes,
Naz

Macmillan Cancer Support
<http://www.macmillan.org.uk/>

Skin Cancer Hub (South West PHO)
<http://www.swpho.nhs.uk/skincancerhub/default.aspx> – includes
http://www.swpho.nhs.uk/skincancerhub/default.aspx?QN=INTER_ALL. The site included a database of small, local sun exposure interventions, most of which did not provide any evaluation information. The reviewers did not feel there was enough time to follow these up, however their presence is noted.

SunSmart Australia and Cancer Council Victoria
<http://www.sunsmart.com.au/> and <http://www.cancervic.org.au/pub-research-area-skin-cancer.html>.
This site included a number of SunSmart evaluations that did not seem to be publically available. Given the volume of literature already identified on SunSmart, and the time restrictions, we did not follow these up.

Vitamin D Mission <http://www.vitamindmission.co.uk/>

Data extraction fields

SR	RCT	Observational	Economic evaluations
Bibliographic details	Bibliographic details	Bibliographic details	Bibliographic details
Study Design	Study design	Study design	Aim of study
Setting (single centre/multicentre)	Setting (single centre/multicentre)	Setting (single centre/multicentre)	Type of economic analysis
Country	Country	Country	Economic perspective
Recruitment dates	Study objectives	Study objectives	Quality score
Additional information	Recruitment dates	Recruitment dates	Applicability
Eligibility criteria	Additional information	Research questions	Source population
Type of participants included	Eligibility criteria	Data collection methods	Setting
Eligible population age	Type of participants included	Type of participants included	Data sources
Actual population age	Eligible population age	Recruitment method	Interventions description
Gender	Actual population age	Number of participants	Comparator/control description
Ethnicity	Gender	Eligible population age	Sample size
Other baseline characteristics	Ethnicity	Actual population age	Outcomes
Intervention	Other baseline characteristics	Gender	Time horizon
Comparison	Intervention	Ethnicity	Discount rates
Primary outcomes	Comparison	Other baseline characteristics	Perspective
Secondary outcomes	Primary outcomes	Intervention	Measures of uncertainty
Number of participants randomised	Secondary outcomes	Comparison (if applicable)	Modeling method
Barriers and/or facilitators that are eligible for inclusion in the barriers/facilitators review	Number of participants randomised	Primary outcomes	Primary analysis
Cost-effectiveness data	The outcome being measured	Secondary outcomes	Secondary analysis
The outcome being measured	Method of outcome measurement	The outcome being measured	Limitations identified by author
Method of outcome measurement	Baseline measurement	Method of outcome measurement	Limitations identified by review team
Baseline measurement	Post-intervention measurement	Baseline measurement	Evidence gaps and/or recommendations for future research
Post-intervention measurement		Post-intervention measurement	Source of funding

APPENDIX B

Excluded Studies Table

Bibliographic Information	Exclusion Reason
I. Schoenmakers, R. M. Francis, E. McColl, T. Chadwick, G. R. Goldberg, C. Harle, A. Yarnall, J. Wilkinson, J. Parker, A. Prentice and T. Aspray. Vitamin D supplementation in older people (VDOP): Study protocol for a randomised controlled intervention trial with monthly oral dosing with 12,000 IU, 24,000 IU or 48,000 IU of vitamin D3. <i>Trials</i> [Electronic Resource]. 2013. 14:299	Protocol only
C. J. Heckman, J. Cohen-Filipic, S. Darlow, J. D. Kloss, S. L. Manne and T. Munshi. Psychiatric and addictive symptoms of young adult female indoor tanners. <i>American Journal of Health Promotion</i> . 2014. 28:168-74	Not focused on risk communication
A. Chandrasena, K. Amin and B. Powell. Dying for a tan: a survey to assess solarium adherence to world health organization guidelines in australia, new zealand, and the United kingdom. <i>Eplasty</i> [Electronic Resource]. 2013. 13:e62	Questionnaire about sun tanning companies and their adherence to policies
B. Bonevski, A. Guillaumier, C. Paul and R. Walsh. The vocational education setting for health promotion: a survey of students' health risk behaviours and preferences for help. <i>Health Promotion Journal of Australia</i> . 2013. 24:185-91	Prevalence data only
M. Falk. Self-estimation or Phototest Measurement of Skin UV Sensitivity and its Association with People's Attitudes Towards Sun Exposure. <i>Anticancer Research</i> . 2014. 34:797-803	not an intervention of interest
R. N. Carey, D. C. Glass, S. Peters, A. Reid, G. Benke, T. R. Driscoll and L. Fritschi. Occupational exposure to solar radiation in Australia: who is exposed and what protection do they use?. <i>Australian & New Zealand Journal of Public Health</i> . 2014. 38:54-9	Reports only prevalence data about occupational exposure to UV.
A. Garg, J. Wang, S. B. Reddy, J. Powers, R. Jacob, M. Powers, K. Biello, R. Cayce, S. Savory, L. Belazarian, E. Domingues, A. Korzenko, L. Wilson, J. M. Grant-Kels, P. George, L. Robinson-Bostom, S. C. Trotter and A. C. Geller. The Integrated Skin Exam film: an educational intervention to promote early detection of melanoma by medical students. <i>Journal of the American Academy of Dermatology</i> . 2014. 70:115-9	melanoma identification training
A. Goldenberg, B. T. Nguyen and S. I. Brian Jiang. Knowledge, Understanding, and Use of Preventive Strategies against Nonmelanoma Skin Cancer in Healthy and Immunosuppressed Individuals Undergoing Mohs Surgery. <i>Dermatologic Surgery</i> . 2014. 40:93-100	Patients with nonmelanoma skin cancer
E. Janssen, E. A. Waters, L. van Osch, L. Lechner and H. de Vries. The importance of affectively-laden beliefs about health risks: the case of tobacco use and sun protection. <i>Journal of Behavioral Medicine</i> . 2014. 37:11-21	not an intervention of interest
H. Dixon, C. Warne, M. Scully, S. Dobbins and M. Wakefield. Agenda-setting effects of sun-related news coverage on public attitudes and beliefs about tanning and skin cancer. <i>Health Communication</i> . 2014. 29:173-81	not an intervention study in an OECD country
Andsoy, II, A. Gul, A. O. Sahin and H. Karabacak. What Turkish Nurses Know and Do about Skin Cancer and Sun Protective Behavior. <i>Asian Pacific Journal of Cancer Prevention: Apjcp</i> . 2013. 14:7663-8	not an intervention of interest
S. Klostermann, G. Bolte and G. M. E. S. Group. Determinants of inadequate parental sun protection behaviour in their children - Results of a cross-sectional study in Germany. <i>International Journal of Hygiene & Environmental Health</i> . 2014. 217:363-9	Prevalence data only
F. Grange, A. S. Woronoff, R. Bera, M. Colomb, B. Lavole, E. Fournier, F. Arnold and C. Barbe. Efficacy of a general practitioner training campaign for early detection of melanoma in France. <i>British Journal of Dermatology</i> . 2014. 170:123-9	melanoma identification

Bibliographic Information	Exclusion Reason
K. L. Akamine, C. J. Gustafson, S. A. Davis, M. M. Levender and S. R. Feldman. Trends in Sunscreen Recommendation Among US Physicians. <i>JAMA Dermatology</i> . 2014. 150:51-5	Reports prevalence of physician sunsmart recommendations
E. Tella, A. Beauchet, I. Vouldoukis, J. F. Sei, P. Beaulieu, M. L. Sigal and E. Mahe. French teenagers and artificial tanning. <i>Journal of the European Academy of Dermatology & Venereology</i> . 2013. 27:e428-32	not an intervention of interest
M. Oldenburg, B. Kuechmeister, U. Ohnemus, X. Baur and I. Moll. Extrinsic skin ageing symptoms in seafarers subject to high work-related exposure to UV radiation. <i>European Journal of Dermatology</i> . 2013. 23:663-70	Not focused on risk communication
H. Kang and K. Walsh-Childers. Sun-care product advertising in parenting magazines: what information does it provide about sun protection?. <i>Health Communication</i> . 2014. 29:1-12	Study is about the content of magazine advertising. Does not address barriers and/or facilitators and does not report changes in people's behaviour
S. A. Lava, G. D. Simonetti, A. A. Bianchetti, A. Ferrarini and M. G. Bianchetti. Prevention of vitamin D insufficiency in Switzerland: a never-ending story. <i>International Journal of Pharmaceutics</i> . 2013. 457:353-6	Study is about oral vitamin D supplementation rather than sunlight
A. Buendia-Eisman, J. Conejo-Mir, L. Prieto, I. Castillejo, J. C. Moreno-Gimenez and S. Arias-Santiago. "Buen Rayito Study": awareness, attitudes and behavior of teenagers to sunlight through a web based system in Spain. <i>European Journal of Dermatology</i> . 2013. 23:505-9	Not focused on risk communication
M. K. Tripp, P. M. Diamond, S. W. Vernon, P. R. Swank, P. Dolan Mullen and E. R. Gritz. Measures of parents' self-efficacy and perceived barriers to children's sun protection: construct validity and reliability in melanoma survivors. <i>Health Education Research</i> . 2013. 28:828-42	Study in people diagnosed with melanoma
L. Buchanan. Slip, slop, slap, seek, slide - is the message really getting across?. <i>Dermatology Online Journal</i> . 2013. 19:19258	Non-systematic review
C. M. Wheat, N. O. Wesley and B. A. Jackson. Recognition of skin cancer and sun protective behaviors in skin of color. <i>Journal of Drugs in Dermatology: JDD</i> . 2013. 12:1029-32	No intervention, OECD
A. K. Day, M. Oxlad and R. M. Roberts. Predictors of sun-related behaviors among young women: comparisons between outdoor tanners, fake tanners, and tan avoiders. <i>Journal of American College Health</i> . 2013. 61:315-22	not an intervention of interest
A. I. Reeder, A. Gray and J. P. McCool. Occupational sun protection: workplace culture, equipment provision and outdoor workers' characteristics. <i>Journal of Occupational Health</i> . 2013. 55:84-97	not an intervention of interest
T. Batista, M. C. Fissmer, K. R. Porton and F. Schuelter-Trevisol. Assessment of sun protection and skin cancer prevention among preschool children. <i>Revista Paulista de Pediatria</i> . 2013. 31:17-23	Non-OECD. Reports incidence and associations only
V. K. Nahar, M. A. Ford, J. S. Hallam, M. A. Bass, A. Hutcheson and M. A. Vice. Skin Cancer Knowledge, Beliefs, Self-Efficacy, and Preventative Behaviors among North Mississippi Landscapers. <i>Dermatology research & Practice</i> . 2013. 2013:496913	not an intervention of interest
K. D. Hoerster and J. A. Mayer. Using research data to impact consumer protection legislation: lessons learned from CITY100 dissemination efforts. <i>Translational Behavioral Medicine</i> . 2013. 3:264-70	Non-systematic review reporting how the data from the CITY100 project was used to legislate tanning bans in young people.
D. B. Buller, M. Berwick, J. Shane, I. Kane, K. Lantz and M. K. Buller. User-centered development of a smart phone mobile application delivering personalized real-time advice on sun protection.	About the set up and testing of a mobile phone app.

Bibliographic Information	Exclusion Reason
Translational Behavioral Medicine. 2013. 3:326-34	
M. Saridi, A. Toska, M. Rekleiti, G. Wozniak, A. Liachopoulou, A. Kalokairinou, K. Souliotis and K. Birbas. Sun-protection habits of primary students in a coastal area of Greece. Journal of Skin Cancer. 2012. 2012:629652	not an intervention of interest
J. L. Hay, C. Bague, Y. Li, I. Orlow and M. Berwick. Interpretation of melanoma risk feedback in first-degree relatives of melanoma patients. Journal of Cancer Epidemiology Print. 2012. 2012:374842	Study about genetic risk of melanoma
M. Kljakovic, C. Davey, R. Sharma and D. Sharma. Clinical audit of health promotion of vitamin D in one general practice. Asia Pacific Family Medicine. 2012. 11:3	Does not report outcomes for sunlight
M. Mogensen and G. B. Jemec. The potential carcinogenic risk of tanning beds: clinical guidelines and patient safety advice. Cancer management and research. 2010. 2:277-82	Not a SR
B. A. Rabin, E. Nehl, T. Elliott, A. D. Deshpande, R. C. Brownson and K. Glanz. Individual and setting level predictors of the implementation of a skin cancer prevention program: a multilevel analysis. Implementation Science. 2010. 5:40	Study about implementation of interventions
R. Ashinoff, V. J. Levine, A. B. Steuer and C. Sedwick. Teens and tanning knowledge and attitudes. The Journal of Clinical & Aesthetic Dermatology. 2009. 2:48-50	not an intervention of interest
G. Cafri, J. K. Thompson, M. Roehrig, P. van den Berg, P. B. Jacobsen and S. Stark. An investigation of appearance motives for tanning: The development and evaluation of the Physical Appearance Reasons For Tanning Scale (PARTS) and its relation to sunbathing and indoor tanning intentions. Body Image. 2006. 3:199-209	Barriers/facilitators non-UK
M. Wickenheiser, M. K. Baker, R. Gaber, H. Blatt and J. K. Robinson. Sun protection preferences and behaviors among young adult males during maximum ultraviolet radiation exposure activities. International Journal of Environmental Research & Public Health [Electronic Resource]. 2013. 10:3203-16	Not focused on risk communication
G. G. McLeod, A. I. Reeder, A. R. Gray and R. McGee. Summer weekend sun exposure and sunburn among a New Zealand urban population, 1994-2006. New Zealand Medical Journal. 2013. 126:12-26	not an intervention, OECD
G. D. Kearney, C. S. Lea, J. Balanay, Q. Wu, J. W. Bethel, H. Von Hollen, K. Sheppard, R. Tutor-Marcom and J. Defazio. Assessment of sun safety behavior among farmers attending a regional farm show in North Carolina. Journal of Agromedicine. 2013. 18:65-73	Reports prevalence data only - no reasons for behaviour given
C. Galletly. Sunshine, supplements, CBT and more. Australian & New Zealand Journal of Psychiatry. 2013. 47:199-200	Non-systematic review
G. P. Guy, Jr., Z. Berkowitz, M. Watson, D. M. Holman and L. C. Richardson. Indoor tanning among young non-Hispanic white females. JAMA Internal Medicine. 2013. 173:1920-2	Not focused on risk communication
M. Janda, P. Youl, A. L. Marshall, H. P. Soyer and P. Baade. The HealthyTexts study: a randomized controlled trial to improve skin cancer prevention behaviors among young people. Contemporary Clinical Trials. 2013. 35:159-67	Baseline characteristics of an RCT. No further data reported
K. Moore, B. J. Smith and K. Reilly. Community understanding of the preventability of major health conditions as a measure of health literacy. Australian Journal of Rural Health. 2013. 21:35-40	Not focused on risk communication
L. K. Dennis and J. B. Lowe. Does artificial UV use prior to spring break protect students from sunburns during spring break?. Photodermatology, Photoimmunology & Photomedicine. 2013. 29:140-8	Prevalence data only.
S. Surdu, E. F. Fitzgerald, M. S. Bloom, F. P. Boscoe, D. O. Carpenter, R. F. Haase, E. Gurzau, P. Rudnai, K. Koppova, J. Fevotte, G. Leonardi, M. Vahter, W. Goessler, R. Kumar and T. Fletcher.	Not focused on risk communication

Bibliographic Information	Exclusion Reason
Occupational exposure to ultraviolet radiation and risk of non-melanoma skin cancer in a multinational European study. PLoS ONE [Electronic Resource]. 2013. 8:e62359	
H. Jang, F. K. Koo, L. Ke, L. Clemson, R. Cant, D. R. Fraser, M. J. Seibel, M. Tseng, E. Mpofu, R. S. Mason and K. Brock. Culture and sun exposure in immigrant East Asian women living in Australia. Women & Health. 2013. 53:504-18	not an intervention of interest
A. I. Reeder, J. A. Jopson and A. R. Gray. Vitamin D insufficiency and deficiency: New Zealand general practitioners' perceptions of risk factors and clinical management. New Zealand Medical Journal. 2013. 126:49-61	Reports GPs perceptions only, not how they convey complex information to patients.
D. P. Kim, I. Chabra, P. Chabra and E. C. Jones. Sunscreen use while driving. Journal of the American Academy of Dermatology. 2013. 68:952-6	Not focused on risk communication
A. C. Green, L. Marquart, S. L. Clemens, C. M. Harper and P. K. O'Rourke. Frequency of sunburn in Queensland adults: still a burning issue.[Erratum appears in Med J Aust. 2013 Jul 22;199(2):102]. Medical Journal of Australia. 2013. 198:431-4	Not focused on risk communication
R. L. Thomson, S. Spedding, G. D. Brinkworth, M. Noakes and J. D. Buckley. Seasonal effects on vitamin D status influence outcomes of lifestyle intervention in overweight and obese women with polycystic ovary syndrome. Fertility & Sterility. 2013. 99:1779-85	No outcomes of interest
A. Pirrone, T. Capetola, E. Riggs and A. Renzaho. Vitamin D deficiency awareness among African migrant women residing in high-rise public housing in Melbourne, Australia: a qualitative study. Asia Pacific Journal of Clinical Nutrition. 2013. 22:292-9	Not an intervention study
J. Fogel and F. Krausz. Watching reality television beauty shows is associated with tanning lamp use and outdoor tanning among college students. Journal of the American Academy of Dermatology. 2013. 68:784-9	not an intervention
D. M. Holman and M. Watson. Correlates of intentional tanning among adolescents in the United States: a systematic review of the literature. Journal of Adolescent Health. 2013. 52:S52-9	not an intervention of interest
E. Janssen, L. van Osch, H. de Vries and L. Lechner. Examining direct and indirect pathways to health behaviour: the influence of cognitive and affective probability beliefs. Psychology & Health. 2013. 28:546-60	not an intervention, OECD
V. Allom, B. Mullan and J. Sebastian. Closing the intention-behaviour gap for sunscreen use and sun protection behaviours. Psychology & Health. 2013. 28:477-94	Not focused on risk communication
M. Suppa, S. Cazzaniga, M. C. Fagnoli, L. Naldi and K. Peris. Knowledge, perceptions and behaviours about skin cancer and sun protection among secondary school students from Central Italy. Journal of the European Academy of Dermatology & Venereology. 2013. 27:571-9	Not an intervention, OECD
S. A. Duffy, D. L. Ronis, A. H. Waltje and S. H. Choi. Protocol of a randomized controlled trial of sun protection interventions for operating engineers. BMC Public Health. 2013. 13:273	Protocol for a study only; no results
S. M. Campbell, Q. Louie-Gao, M. L. Hession, E. Bailey, A. C. Geller and D. Cummins. Skin cancer education among massage therapists: a survey at the 2010 meeting of the American Massage Therapy Association. Journal of Cancer Education. 2013. 28:158-64	melanoma identification
B. Bonevski, J. Bryant, S. Lambert, I. Brozek and V. Rock. The ABC of vitamin D: a qualitative study of the knowledge and attitudes regarding vitamin D deficiency amongst selected population groups. Nutrients. 2013. 5:915-27	not an intervention, OECD
A. J. Blashill. Psychosocial correlates of frequent indoor tanning among adolescent boys. Body Image. 2013. 10:259-62	Not focused on risk communication

Bibliographic Information	Exclusion Reason
K. N. Petty, C. R. Knee and A. K. Joseph. Sunscreen use among recreational cyclists: how intentions predict reported behavior. <i>Journal of Health Psychology</i> . 2013. 18:439-47	Not focused on risk communication
C. Mills, M. Knuiman, M. Rosenberg, L. Wood and R. Ferguson. Are the arts an effective setting for promoting health messages?. <i>Perspectives in Public Health</i> . 2013. 133:116-21	not very concrete intervention and it is really the sponsorship aspect being investigated " so I suggest exclude
S. Schneider, K. Diehl, C. Bock, M. Schluter, E. W. Breitbart, B. Volkmer and R. Greinert. Sunbed use, user characteristics, and motivations for tanning: results from the German population-based SUN-Study 2012. <i>JAMA Dermatology</i> . 2013. 149:43-9	German study of sunbed use and motivational reasons
M. Falk and C. D. Anderson. Influence of age, gender, educational level and self-estimation of skin type on sun exposure habits and readiness to increase sun protection. <i>Cancer Epidemiology</i> . 2013. 37:127-32	Questionnaire about sun exposure and readiness to increase sun protection. Not a UK barriers/facilitators study
A. Isvy, A. Beauchet, P. Saiag and E. Mahe. Medical students and sun prevention: knowledge and behaviours in France. <i>Journal of the European Academy of Dermatology & Venereology</i> . 2013. 27:e247-51	Sun protection questionnaire in French medical students
C. Roman, A. Lugo-Somolinos and N. Thomas. Skin cancer knowledge and skin self-examinations in the Hispanic population of North Carolina: the patient's perspective. <i>JAMA Dermatology</i> . 2013. 149:103-4	Not focused on risk communication
E. J. Coups, J. L. Stapleton, S. V. Hudson, A. Medina-Forrester, A. Natale-Pereira and J. S. Goydos. Sun protection and exposure behaviors among Hispanic adults in the United States: differences according to acculturation and among Hispanic subgroups. <i>BMC Public Health</i> . 2012. 12:985	Not focused on risk communication
B. A. Glenn, R. Bastani, L. C. Chang, R. Khanna and K. Chen. Sun protection practices among children with a family history of melanoma: a pilot study. <i>Journal of Cancer Education</i> . 2012. 27:731-7	Not focused on risk communication
B. Ladizinski, R. Ladizinski and K. C. Lee. MTV's Jersey Shore and the "GTL" mantra: time to lose the "Tanning". <i>Journal of the American Academy of Dermatology</i> . 2012. 67:1380-2	Not focused on risk communication
J. Adams, E. L. Giles, S. Robalino, E. McColl and F. F. Sniehotta. A systematic review of the use of financial incentives and penalties to encourage uptake of healthy behaviors: protocol. <i>Systems Review</i> . 2012. 1:51	Protocol only
C. Y. Pourciau, M. J. Eide, M. Mahan and H. W. Lim. Photoprotection counseling of non-white ethno-racial groups: a survey of the practice of expert dermatologists. <i>Photodermatology, Photoimmunology & Photomedicine</i> . 2012. 28:335-7	No patient outcomes, only dermatologists' reports of advice given
A. Wysong, H. Gladstone, D. Kim, B. Lingala, J. Copeland and J. Y. Tang. Sunscreen use in NCAA collegiate athletes: identifying targets for intervention and barriers to use. <i>Preventive Medicine</i> . 2012. 55:493-6	no intervention, OECD
E. Lynch. Thinking outside the box. <i>Nursing Standard</i> . 2012. 27:23	Not SR/RCT
R. Estrada, G. Chavez-Lopez, G. Estrada-Chavez and S. Paredes-Solis. Specialized dermatological care for marginalized populations and education at the primary care level: is community dermatology a feasible proposal?. <i>International Journal of Dermatology</i> . 2012. 51:1345-50	Not impact of sunlight intervention
K. D. Reynolds, D. B. Buller, S. A. French, M. K. Buller and J. L. Ashley. School sun-protection policies: measure development and assessments in 2 regions of the United States. <i>Journal of School Health</i> . 2012. 82:499-507	No patient outcomes, only content of school policies
R. Branstrom, N. A. Kasparian, P. Affleck, A. Tibben, Y. M. Chang, E.	No intervention and a

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Azizi, O. Baron-Epel, W. Bergman, M. Chan, J. Davies, C. Ingvar, P. A. Kanetsky, E. van Leeuwen, H. Olsson, N. A. Gruis, Y. Brandberg and J. Newton-Bishop. Perceptions of genetic research and testing among members of families with an increased risk of malignant melanoma. <i>European Journal of Cancer</i> . 2012. 48:3052-62	majority of participants had melanoma
H. de Vries, L. van Osch, K. Eijmael, C. Smerecnik and M. Candel. The role of risk perception in explaining parental sunscreen use. <i>Psychology & Health</i> . 2012. 27:1342-58	Risk perception study conducted in the Netherlands
C. E. Thomson, K. M. White and K. Hamilton. Investigating mothers' decisions about their child's sun-protective behaviour using the Theory of Planned Behaviour. <i>Journal of Health Psychology</i> . 2012. 17:1001-10	Not focused on risk communication
M. Garcia-Toro, O. Ibarra, M. Gili, M. J. Serrano, M. Vives, S. Monzon, N. Bauza, B. Olivan, E. Vicens and M. Roca. Adherence to lifestyle recommendations by patients with depression. <i>Revista de Psiquiatria y Salud Mental</i> . 2012. 5:236-40	Study is about sunlight exposure for non-seasonal depression. Not a population of interest
A. I. Reeder, J. A. Jopson and A. R. Gray. "Prescribing sunshine": a national, cross-sectional survey of 1,089 New Zealand general practitioners regarding their sun exposure and vitamin D perceptions, and advice provided to patients. <i>BMC Family Practice</i> . 2012. 13:85	No patient outcomes
V. Cokkinides, D. Kirkland, K. Andrews, K. Sullivan and J. L. Lichtenfeld. A profile of skin cancer prevention media coverage in 2009. <i>Journal of the American Academy of Dermatology</i> . 2012. 67:570-5	content analysis of media stories
K. Hamilton, K. M. White, D. Y. R. Mc, A. L. Hawkes, L. C. Starfelt and S. Leske. Identifying critical sun-protective beliefs among Australian adults. <i>Health Education Research</i> . 2012. 27:834-43	Not focused on risk communication
A. I. Reeder, J. A. Jopson and A. Gray. Primary school sun protection policies and practices 4 years after baseline--a follow-up study. <i>Health Education Research</i> . 2012. 27:844-56	School policies, not patient outcomes
M. Dean. "Many issues and beliefs affect individual sun safety advice". <i>Nursing Times</i> . 2012. 108:11	Editorial
C. Hernandez, D. Calero, G. Robinson, R. Mermelstein and J. K. Robinson. Comparison of sunscreen availability in Chicago Hispanic and non-Hispanic neighborhoods. <i>Photodermatology, Photoimmunology & Photomedicine</i> . 2012. 28:244-9	Not focused on risk communication
S. A. Oliveria, M. K. Heneghan, A. C. Halpern, J. L. Hay and A. C. Geller. Communication about family members' risk of melanoma: self-reported practices of dermatologists in the United States. <i>Archives of Dermatology</i> . 2012. 148:621-7	Barriers/facilitators non-UK
A. D. Tran, J. Aalborg, N. L. Asdigian, J. G. Morelli, S. T. Mokrohisky, R. P. Dellavalle, M. Berwick, N. F. Box and L. A. Crane. Parents' perceptions of skin cancer threat and children's physical activity. <i>Preventing Chronic Disease</i> . 2012. 9:E143	Cross sectional study from Colorado explore relationships between parental perceptions of skin cancer threat, sun protection behaviors, physical activity, and body mass index (BMI) in children.
L. G. Gordon, N. G. Hirst, A. C. Green and R. E. Neale. Tanning behaviors and determinants of solarium use among indoor office workers in Queensland, Australia. <i>Journal of Health Psychology</i> . 2012. 17:856-65	Cross sectional survey about prevalence and factors associated with indoor tanning in Brisbane office workers
E. de Vries, M. Arnold, E. Altsitsiadis, M. Trakatelli, B. Hinrichs, E. Stockfleth, J. Coebergh and E. Group. Potential impact of interventions resulting in reduced exposure to ultraviolet (UV) radiation	Model of future skin cancer burden, not effect of interventions

Bibliographic Information	Exclusion Reason
(UVA and UVB) on skin cancer incidence in four European countries, 2010-2050. <i>British Journal of Dermatology</i> . 2012. 167 Suppl 2:53-62	
E. Altsitsiadis, T. Undheim, E. de Vries, B. Hinrichs, E. Stockfleth, M. Trakatelli and E. Group. Health literacy, sunscreen and sunbed use: an uneasy association. <i>British Journal of Dermatology</i> . 2012. 167 Suppl 2:14-21	Not focused on risk communication
S. A. Duffy, S. H. Choi, R. Hollern and D. L. Ronis. Factors associated with risky sun exposure behaviors among operating engineers. <i>American Journal of Industrial Medicine</i> . 2012. 55:786-92	Not focused on risk communication
M. M. Gillen and C. N. Markey. The role of body image and depression in tanning behaviors and attitudes. <i>Behavioral Medicine</i> . 2012. 38:74-82	Not focused on risk communication
V. Siegel. Adding patient education of skin cancer and sun-protective behaviors to the skin assessment screening on admission to hospitals. <i>MEDSURG Nursing</i> . 2012. 21:183-4	No patient outcomes
A. Neenan, C. S. Lea and E. B. Lesesky. Reasons for tanning bed use: a survey of community college students in North Carolina. <i>North Carolina Medical Journal</i> . 2012. 73:89-92	Not focused on risk communication
B. H. Kim, K. Glanz and E. J. Nehl. Vitamin D beliefs and associations with sunburns, sun exposure, and sun protection. <i>International Journal of Environmental Research & Public Health</i> [Electronic Resource]. 2012. 9:2386-95	Not focused on risk communication
E. Yurtseven, T. Ulus, S. Vehid, S. Koxsal, M. Bosat and K. Akkoyun. Assessment of knowledge, behaviour and sun protection practices among health services vocational school students. <i>International Journal of Environmental Research & Public Health</i> [Electronic Resource]. 2012. 9:2378-85	Not focused on risk communication
S. Allinson, M. Asmuss, C. Baldermann, J. Bentzen, D. Buller, N. Gerber, A. C. Green, R. Greinert, M. Kimlin, J. Kunrath, R. Matthes, C. Polzl-Viol, E. Rehfuess, C. Rossmann, N. Schuz, C. Sinclair, E. Deventer, A. Webb, W. Weiss and G. Ziegelberger. Validity and use of the UV index: report from the UVI working group, Schloss Hohenkammer, Germany, 5-7 December 2011. <i>Health Physics</i> . 2012. 103:301-6	No patient outcomes
S. Mair, H. P. Soyer, P. Youl, C. Hurst, A. Marshall and M. Janda. Personalised electronic messages to improve sun protection in young adults. <i>Journal of Telemedicine & Telecare</i> . 2012. 18:247-52	Recall of sun protection advice but not a specific intervention
D. B. Buller, B. J. Walkosz, P. A. Andersen, M. D. Scott, M. B. Dignan, G. R. Cutter, X. Zhang and I. L. Kane. Sustainability of the dissemination of an occupational sun protection program in a randomized trial. <i>Health Education & Behavior</i> . 2012. 39:498-502	Dissemination of an intervention, not patient outcomes
C. J. Heckman, S. Darlow, J. Cohen-Filipic, J. D. Kloss, S. L. Manne, T. Munshi and C. S. Perlis. Psychosocial correlates of sunburn among young adult women. <i>International Journal of Environmental Research & Public Health</i> [Electronic Resource]. 2012. 9:2241-51	Not focused on risk communication
S. A. Devos, J. D. Van der Endt, W. Broeckx, M. Vandaele, V. del Marmol, D. Roseeuw and T. Maselis. Sunscreen use and skin protection behaviour on the Belgian beach: a comparison 9 years later. <i>European Journal of Cancer Prevention</i> . 2012. 21:474-7	The study looks at the prevalence and predictors of sun smart behaviour over time in Belgium
D. Buchbinder, A. C. Mertens, L. K. Zeltzer, W. Leisenring, P. Goodman, E. A. Lown, M. A. Alderfer, C. Recklitis, K. Oeffinger, G. T. Armstrong, M. Hudson, L. L. Robison and J. Casillas. Cancer prevention and screening practices of siblings of childhood cancer survivors: a report from the Childhood Cancer Survivor Study. <i>Cancer Epidemiology, Biomarkers & Prevention</i> . 2012. 21:1078-88	Not focused on risk communication
C. Craciun, N. Schuz, S. Lippke and R. Schwarzer. Translating intentions into sunscreen use: an interaction of self-efficacy and appearance norms. <i>Psychology Health & Medicine</i> . 2012. 17:447-56	Not focused on risk communication

Bibliographic Information	Exclusion Reason
M. L. Greaney, E. Puleo, A. C. Geller, S. W. Hu, A. E. Werchniak, S. DeCristofaro, K. M. Emmons. Patient follow-up after participating in a beach-based skin cancer screening program. <i>International Journal of Environmental Research & Public Health</i> [Electronic Resource]. 2012. 9:1836-45	melanoma screening
D. B. Buller, P. A. Andersen, B. J. Walkosz, M. D. Scott, G. R. Cutter, M. B. Dignan, I. L. Kane, X. Zhang. Enhancing industry-based dissemination of an occupational sun protection program with theory-based strategies employing personal contact. <i>American Journal of Health Promotion</i> . 2012. 26:356-65	North America study; dissemination of intervention but no patient outcomes
S. Lawler, L. McDermott, D. O'Riordan, K. Spathonis, E. Eakin, E. Leslie, C. Gallois, N. Berndt, N. Owen. Relationships of sun-protection habit strength with sunscreen use during outdoor sport and physical activity. <i>International Journal of Environmental Research & Public Health</i> [Electronic Resource]. 2012. 9:916-23	Not focused on risk communication; Australia, no intervention
A. I. Tschetter, J. C. Lindemann. The many languages of skin health. <i>South Dakota Medicine: The Journal of the South Dakota State Medical Association</i> . 2012. 65:177-9, 181, 183	Study investigating several types of educational posters in the US
N. Abda, K. El Rhazi, M. Obtel, K. Bendahhou, A. Zidouh, M. Bennani, R. Bekkali, C. Nejari. Determinants of self-reported sun protection practices among Moroccan population. <i>Preventive Medicine</i> . 2012. 54:422-4	Not focused on risk communication; non-UK, no intervention
E. Janssen, L. van Osch, L. Lechner, M. Candel, H. de Vries. Thinking versus feeling: differentiating between cognitive and affective components of perceived cancer risk. <i>Psychology & Health</i> . 2012. 27:767-83	Not focused on risk communication; non-UK, no intervention
E. Shuk, J. E. Burkhalter, C. F. Bagger, S. M. Holland, A. Pinkhasik, M. S. Brady, D. G. Coit, C. E. Ariyan, J. L. Hay. Factors associated with inconsistent sun protection in first-degree relatives of melanoma survivors. <i>Qualitative Health Research</i> . 2012. 22:934-45	Study about sun protection in melanoma first degree relatives from the US
J. E. McWhirter, L. Hoffman-Goetz. Visual images for skin cancer prevention: a systematic review of qualitative studies. <i>Journal of Cancer Education</i> . 2012. 27:202-16	Review investigates images in advertising - no data about how this impacts on readers
C. J. Heckman, J. Cohen-Filipic. Brief report: ultraviolet radiation exposure, considering acculturation among Hispanics (project URECAH). <i>Journal of Cancer Education</i> . 2012. 27:342-6	Study investigates skin cancer prevention attitudes and behaviours in acculturated Hispanics
S. Dobbins, M. Wakefield, D. Hill, A. Girgis, J. F. Aitken, K. Beckmann, A. I. Reeder, N. Herd, M. J. Spittal, A. Fairthorne, K. A. Bowles. Children's sun exposure and sun protection: prevalence in Australia and related parental factors. <i>Journal of the American Academy of Dermatology</i> . 2012. 66:938-47	Study investigates prevalence of children's sun-related behaviors and associated parental and other factors in Australian and NZ children
Control Centers for Disease, Prevention. Use of indoor tanning devices by adults--United States, 2010. <i>MMWR - Morbidity & Mortality Weekly Report</i> . 2012. 61:323-6	Not focused on risk communication; non-UK, no intervention
Control Centers for Disease, Prevention. Sunburn and sun protective behaviors among adults aged 18-29 years--United States, 2000-2010. <i>MMWR - Morbidity & Mortality Weekly Report</i> . 2012. 61:317-22	Study investigates evaluate trends in sunburn and sun protective behaviors in the US
A. L. Paiva, J. O. Prochaska, H. Q. Yin, J. S. Rossi, C. A. Redding, B. Blissmer, M. L. Robbins, W. F. Velicer, J. Lipschitz, N. Amoyal, S. F. Babbitt, C. L. Blaney, M. A. Sillice, A. Fernandez, H. McGee, S. Horiuchi. Treated individuals who progress to action or maintenance for one behavior are more likely to make similar progress on another	This study explores taking action in more than one healthy lifestyle choice at once. Not representative of the general population

Bibliographic Information	Exclusion Reason
behavior: coercion results of a pooled data analysis of three trials. Preventive Medicine. 2012. 54:331-4	
H. de Vries, M. Logister, G. Krekels, F. Klaasse, V. Servranckx, L. van Osch. Internet based computer tailored feedback on sunscreen use. Journal of Medical Internet Research. 2012. 14:e48	Cross sectional Dutch study investigating perceptions concerning sunscreen
K. Lostritto, L. M. Ferrucci, B. Cartmel, D. J. Leffell, A. M. Molinaro, A. E. Bale, S. T. Mayne. Lifetime history of indoor tanning in young people: a retrospective assessment of initiation, persistence, and correlates. BMC Public Health. 2012. 12:118	Study collects retrospective information on lifetime history of indoor tanning in the US
J. Weiss, R. S. Kirsner, S. Hu. Trends in primary skin cancer prevention among US Hispanics: a systematic review. Journal of Drugs in Dermatology: JDD. 2012. 11:580-6	Study aimed to evaluate trends in skin cancer prevention efforts among Hispanics in the US
K. J. Buster, Z. You, M. Fouad, C. Elmetts. Skin cancer risk perceptions: a comparison across ethnicity, age, education, gender, and income. Journal of the American Academy of Dermatology. 2012. 66:771-9	Not focused on risk communication; non-UK, no intervention
R. E. Sahn, M. J. McIlwain, K. H. Magee, E. Veledar, S. C. Chen. A cross-sectional study examining the correlation between sunless tanning product use and tanning beliefs and behaviors. Archives of Dermatology. 2012. 148:448-54	Not focused on risk communication; non-UK, no intervention
M. F. Holick, N. C. Binkley, H. A. Bischoff-Ferrari, C. M. Gordon, D. A. Hanley, R. P. Heaney, M. H. Murad, C. M. Weaver. Guidelines for preventing and treating vitamin D deficiency and insufficiency revisited. Journal of Clinical Endocrinology & Metabolism. 2012. 97:1153-8	Commentary not primary study
L. Dupont, D. N. Pereira. Sun exposure and sun protection habits in high school students from a city south of the country. Anais Brasileiros de Dermatologia. 2012. 87:90-5	Not focused on risk communication; non-UK, no intervention
M. Santiago-Rivas, W. F. Velicer, C. A. Redding, J. O. Prochaska, A. L. Paiva. Cluster subtypes within the precontemplation stage of change for sun protection behavior. Psychology Health & Medicine. 2012. 17:311-22	Not focused on risk communication; non-UK, no intervention
J. Li, W. Uter, A. Pfahlberg, O. Gefeller. A comparison of patterns of sun protection during beach holidays and everyday outdoor activities in a population sample of young German children. British Journal of Dermatology. 2012. 166:803-10	Not focused on risk communication; non-UK, no intervention
C. H. Basch, G. C. Hillyer, C. E. Basch, A. I. Neugut. Improving understanding about tanning behaviors in college students: a pilot study. Journal of American College Health. 2012. 60:250-6	Not focused on risk communication; non-UK, no intervention
D. Reinau, C. Meier, N. Gerber, G. F. Hofbauer, C. Surber. Sun protective behaviour of primary and secondary school students in North-Western Switzerland. Swiss Medical Weekly. 2012. 142:w13520	indirect evaluation of national campaigns
B. Bonevski, A. Girgis, P. Magin, G. Horton, I. Brozek, B. Armstrong. Prescribing sunshine: a cross-sectional survey of 500 Australian general practitioners' practices and attitudes about vitamin D. International Journal of Cancer. 2012. 130:2138-45	Not focused on risk communication; Australia; no patient outcomes
S. Durvasula, P. N. Sambrook, I. D. Cameron. Factors influencing adherence with therapeutic sunlight exposure in older people in intermediate care facilities. Archives of Gerontology & Geriatrics. 2012. 54:e234-41	Intervention is sun exposure (falls prevention) but not communication of risk; none of the listed outcomes; Australia
A. I. Reeder, J. A. Jopson, A. Gray. Sun protection policies and practices in New Zealand primary schools. New Zealand Medical Journal. 2012. 125:70-82	Intervention for school policies not risk communication; no patient outcomes; New Zealand

Bibliographic Information	Exclusion Reason
J. Miyamoto, Z. Berkowitz, S. E. Jones, M. Saraiya. Indoor tanning device use among male high school students in the United States. <i>Journal of Adolescent Health</i> . 2012. 50:308-10	Not focused on risk communication; non-UK, no intervention
C. Craciun, N. Schuz, S. Lippke, R. Schwarzer. A mediator model of sunscreen use: a longitudinal analysis of social-cognitive predictors and mediators. <i>International Journal of Behavioral Medicine</i> . 2012. 19:65-72	Not focused on risk communication; non-UK, no intervention
J. Hay, K. A. Kaphingst, R. Baser, Y. Li, S. Hensley-Alford, C. M. McBride. Skin cancer concerns and genetic risk information-seeking in primary care. <i>Public Health Genomics</i> . 2012. 15:57-72	Not focused on risk communication; non-UK, no outcomes of interventions
M. Williams, S. C. Jones, P. Caputi, D. Iverson. Australian adolescents' compliance with sun protection behaviours during summer: the importance of the school context. <i>Health Promotion International</i> . 2012. 27:15-22	Not focused on risk communication; non-UK, no intervention
S. W. Dusza, A. C. Halpern, J. M. Satagopan, S. A. Oliveria, M. A. Weinstock, A. Scope, M. Berwick, A. C. Geller. Prospective study of sunburn and sun behavior patterns during adolescence. <i>Pediatrics</i> . 2012. 129:309-17	Not focused on risk communication; non-UK, no intervention
A. L. Hawkes, K. Hamilton, K. M. White, D. Young R. Mc. A randomised controlled trial of a theory-based intervention to improve sun protective behaviour in adolescents ('you can still be HOT in the shade'): study protocol. <i>BMC Cancer</i> . 2012. 12:1	Study protocol only, no results
A. Katz, A. Lambert-Lanning, A. Miller, B. Kaminsky, J. Enns. Delivery of preventive care: the national Canadian Family Physician Cancer and Chronic Disease Prevention Survey. <i>Canadian Family Physician</i> . 2012. 58:e62-9	Barriers/facilitators but not UK
T. Aspden, D. K. Ingledew, J. A. Parkinson. Motives and health-related behaviour: incremental prediction by implicit motives. <i>Psychology & Health</i> . 2012. 27:51-71	Not focused on risk communication; no external influence or intervention described
D. B. Buller, P. A. Andersen, B. J. Walkosz, M. D. Scott, J. A. Maloy, M. B. Dignan, G. R. Cutter. Compliance with sunscreen advice in a survey of adults engaged in outdoor winter recreation at high-elevation ski areas. <i>Journal of the American Academy of Dermatology</i> . 2012. 66:63-70	not evaluating an intervention, this is a pre-intervention survey, OECD
E. Linos, E. Keiser, M. Kanzler, K. L. Sainani, W. Lee, E. Vittinghoff, M. M. Chren, J. Y. Tang. Sun protective behaviors and vitamin D levels in the US population: NHANES 2003-2006. <i>Cancer Causes & Control</i> . 2012. 23:133-40	Not focused on risk communication; non-UK no intervention
A. Friedland, T. Bianchetta, D. Elliott. Back to school: using physicians to teach middle school health. <i>Delaware Medical Journal</i> . 2011. 83:277-82	Non-UK barriers and facilitators
S. Kalia, D. McLean. Community programs in reducing ultraviolet radiation exposure. <i>Journal of Cutaneous Medicine & Surgery</i> . 2011. 15 Suppl 1:S387-91	This is a non-systematic review
C. J. Heckman, S. L. Manne, J. D. Kloss, S. B. Bass, B. Collins, S. R. Lessin. Beliefs and intentions for skin protection and UV exposure in young adults. <i>American Journal of Health Behavior</i> . 2011. 35:699-711	Not focused on risk communication; non-UK, no intervention
J. E. Munoz Negro, A. Buendia-Eisman, A. Cabrera Leon, S. Serrano Ortega. Variables associated with sun protection behaviour of preschoolers. <i>European Journal of Dermatology</i> . 2011. 21:985-90	not a SR or primary study
M. Kuhrik, C. Seckman, N. Kuhrik, T. Ahearn, P. Ercole. Bringing skin assessments to life using human patient simulation: an emphasis on cancer prevention and early detection. <i>Journal of Cancer Education</i> . 2011. 26:687-93	melanoma assessment, minor information on sun protective behaviour
M. B. Planta. Sunscreen and melanoma: is our prevention message correct?. <i>Journal of the American Board of Family Medicine: JABFM</i> .	non-systematic review

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2011. 24:735-9	
H. S. Gillespie, T. Watson, J. D. Emery, A. J. Lee, P. Murchie. A questionnaire to measure melanoma risk, knowledge and protective behaviour: assessing content validity in a convenience sample of Scots and Australians. <i>BMC Medical Research Methodology</i> . 2011. 11:123	Not focused on risk communication; not barriers/facilitators or intervention
M. Williams, P. Caputi, S. C. Jones, D. Iverson. Sun protecting and sun exposing behaviors: testing their relationship simultaneously with indicators of ultraviolet exposure among adolescents. <i>Photochemistry & Photobiology</i> . 2011. 87:1179-83	Study aimed to assess specific sun protecting and sun exposing behaviors in Australian adolescents
Boynton, M. Oxlad. Melanoma and its relationship with solarium use: health knowledge, attitudes and behaviour of young women. <i>Journal of Health Psychology</i> . 2011. 16:969-79	Study investigates knowledge, attitudes and behaviour towards solarium use among young Australian women
C. L. Paul, L. Paras, A. Harper, K. Coppa. Harm minimization in tan seekers: an exploration of tanning behaviour and the potential for substitutional use of sunless tanning products. <i>Journal of Health Psychology</i> . 2011. 16:929-37	Not focused on risk communication; non-UK, no patient outcomes of intervention
T. Hotta. Understanding the risks and prevention of skin cancer. <i>Plastic Surgical Nursing</i> . 2011. 31:129-31	No outcomes of risk communication intervention
E. Mahe, A. Beauchet, M. F. de Maleissye, P. Saiag. Are sunscreens luxury products?. <i>Journal of the American Academy of Dermatology</i> . 2011. 65:e73-9	Study investigates the cost of sunscreen use in two different scenarios in France
S. L. Clipp, A. Burke, J. Hoffman-Bolton, R. Alani, N. J. Liegeois, A. J. Alberg. Sun-seeking behavior to increase cutaneous vitamin D synthesis: when prevention messages conflict. <i>Public Health Reports</i> . 2011. 126:533-9	Study describes the prevalence of (1) awareness of unprotected sun exposure to increase vitamin D and (2) the extent to which concerns about vitamin D may be influencing sun exposure in the US
J. K. Robinson, M. Bigby. Prevention of melanoma with regular sunscreen use. <i>JAMA</i> . 2011. 306:302-3	Commentary not primary study
V. A. Andreeva, M. G. Cockburn, A. L. Yaroch, J. B. Unger, R. Rueda, K. D. Reynolds. Preliminary evidence for mediation of the association between acculturation and sun-safe behaviors. <i>Archives of Dermatology</i> . 2011. 147:814-9	US study about the effect of acculturation on use of sunscreen, shade, and sun-protective clothing
L. Rezai, C. Thorgaard, A. Philip. Influential factors for sun policy implementation in Danish kindergartens. <i>Scandinavian Journal of Public Health</i> . 2011. 39:479-83	Study investigates the factors that influence a decision to implement the sun policy in Danish kindergartens
L. M. Oliveira, N. Glauss, A. Palma. Habits related to sun exposure among physical education teachers working with water activities. <i>Anais Brasileiros de Dermatologia</i> . 2011. 86:445-50	Study investigates sun-exposure habits among teachers of physical education (PE) who work with water activities in Brazil
C. H. Brouse, G. C. Hillyer, C. E. Basch, A. I. Neugut. Geography, facilities, and promotional strategies used to encourage indoor tanning in New York City. <i>Journal of Community Health</i> . 2011. 36:635-9	Study about indoor tanning facilities in New York
J. Li, W. Uter, A. Pfahlberg, O. Gefeller. Parental perspective on sun protection for young children in Bavaria. <i>Photodermatology, Photoimmunology & Photomedicine</i> . 2011. 27:196-202	Study about Parents' attitude, knowledge and behavior regarding sun

Bibliographic Information	Exclusion Reason
	protection in Erlangen
M. Falk. Differences in sun exposure habits between self-reported skin type and ultraviolet sensitivity measured by phototest. <i>Photodermatology, Photoimmunology & Photomedicine</i> . 2011. 27:190-5	Study investigates how self-estimated skin type, and actual UV sensitivity measured by phototest correlate with sun exposure and protection in Sweden
I. Prichard, M. Tiggemann. Appearance investment in Australian brides-to-be. <i>Body Image</i> . 2011. 8:282-6	Study investigates appearance concerns of 440 engaged women recruited from bridal websites across Australia
E. Linos, E. Keiser, T. Fu, G. Colditz, S. Chen, J. Y. Tang. Hat, shade, long sleeves, or sunscreen? Rethinking US sun protection messages based on their relative effectiveness. <i>Cancer Causes & Control</i> . 2011. 22:1067-71	Not focused on risk communication; non-UK, no intervention
P. Murchie, F. C. Iweuke. Comparing personal risk, melanoma knowledge and protective behaviour in people with and without melanoma: a postal survey to explore educational needs in northeast Scotland. <i>Journal of Cancer Education</i> . 2011. 26:341-7	Excluded population (people with previous skin cancer)
G. D. Karelis. Social marketing self-esteem: a socio-medical approach to high-risk and skin tone alteration activities. <i>International Journal of Dermatology</i> . 2011. 50:590-2	Not a primary study or systematic review
H. G. Dixon, C. D. Warne, M. L. Scully, M. A. Wakefield, S. J. Dobbins. Does the portrayal of tanning in Australian women's magazines relate to real women's tanning beliefs and behavior?. <i>Health Education & Behavior</i> . 2011. 38:132-42	Non-UK, no intervention
M. A. Karlsson, C. F. Wahlgren, K. Wiklund, Y. Rodvall. Parental sun-protective regimens and prevalence of common melanocytic naevi among 7-year-old children in Sweden: changes over a 5-year period. <i>British Journal of Dermatology</i> . 2011. 164:830-7	no risk communication intervention, OECD
S. Cheng, X. Guan, M. Cao, Y. Liu, S. Zhai. Randomized trial of the impact of a sun safety program on volunteers in outdoor venues. <i>Photodermatology, Photoimmunology & Photomedicine</i> . 2011. 27:75-80	Intervention but not OECD country (China)
I. Galan, A. Rodriguez-Laso, L. Diez-Ganan, E. Camara. Prevalence and correlates of skin cancer risk behaviors in Madrid (Spain). <i>Gaceta Sanitaria</i> . 2011. 25:44-9	Not focused on risk communication; non-UK, no intervention
S. L. Manne, E. J. Coups, P. B. Jacobsen, M. Ming, C. J. Heckman, S. Lessin. Sun protection and sunbathing practices among at-risk family members of patients with melanoma. <i>BMC Public Health</i> . 2011. 11:122	pre-intervention data
N. C. Berndt, D. L. O'Riordan, E. Winkler, L. McDermott, K. Spathonis, N. Owen. Social cognitive correlates of young adult sport competitors' sunscreen use. <i>Health Education & Behavior</i> . 2011. 38:6-14	no intervention, OECD
J. K. Robinson, K. M. Joshi, S. Ortiz, R. V. Kundu. Melanoma knowledge, perception, and awareness in ethnic minorities in Chicago: recommendations regarding education. <i>Psycho-Oncology</i> . 2011. 20:313-20	Non-UK; no patient outcomes of an intervention
S. Cathcart, J. DeCoster, M. Northington, W. Cantrell, C. A. Elmets, B. E. Elewski. Interest in cosmetic improvement as a marker for tanning behavior: a survey of 1602 respondents. <i>Journal of Cosmetic Dermatology</i> . 2011. 10:3-10	Not focused on risk communication; non-UK, no intervention
S. E. Hill, K. M. Durante. Courtship, competition, and the pursuit of attractiveness: mating goals facilitate health-related risk taking and strategic risk suppression in women. <i>Personality & Social Psychology Bulletin</i> . 2011. 37:383-94	Non-UK, no intervention

Bibliographic Information	Exclusion Reason
G. A. Kemp, L. Eagle, J. Verne. Mass media barriers to social marketing interventions: the example of sun protection in the UK. <i>Health Promotion International</i> . 2011. 26:37-45	not a SR or a primary study
J. Hay, M. DiBonaventura, R. Baser, N. Press, J. Shoveller, D. Bowen. Personal attributions for melanoma risk in melanoma-affected patients and family members. <i>Journal of Behavioral Medicine</i> . 2011. 34:53-63	Not focused on risk communication; non-UK, no intervention
K. A. Ettridge, J. A. Bowden, J. M. Rayner, C. J. Wilson. The relationship between sun protection policy and associated practices in a national sample of early childhood services in Australia. <i>Health Education Research</i> . 2011. 26:53-62	description of sun protection policies in Australia
S. Potente, K. Coppa, A. Williams, R. Engels. Legally brown: using ethnographic methods to understand sun protection attitudes and behaviours among young Australians 'I didn't mean to get burnt--it just happened!'. <i>Health Education Research</i> . 2011. 26:39-52	no intervention, OECD
E. Janssen, L. van Osch, H. de Vries, L. Lechner. Measuring risk perceptions of skin cancer: reliability and validity of different operationalizations. <i>British Journal of Health Psychology</i> . 2011. 16:92-112	Not focused on risk communication, non-UK, no intervention
C. R. Harrington, T. C. Beswick, J. Leitenberger, A. Minhajuddin, H. T. Jacobe, B. Adinoff. Addictive-like behaviours to ultraviolet light among frequent indoor tanners. <i>Clinical & Experimental Dermatology</i> . 2011. 36:33-8	Non-UK, no intervention
M. Thomas, E. Rioual, H. Adamski, A. M. Roguedas, L. Misery, M. Michel, F. Chastel, J. L. Schmutz, F. Aubin, M. C. Marguery, N. Meyer. Physicians involved in the care of patients with high risk of skin cancer should be trained regarding sun protection measures: evidence from a cross sectional study. <i>Journal of the European Academy of Dermatology & Venereology</i> . 2011. 25:19-23	Non-UK, no intervention
E. P. Armstrong, C. Campbell, A. Van Allen, E. Vincent. Skin cancer knowledge and prevention counseling among Arizona pharmacists. <i>Journal of Pharmacy Practice</i> . 2010. 23:358-66	Non-UK, no intervention
K. D. Cassel. "Sun Safe Kids," implementing a low cost, school-based public policy to protect Hawaii's children from skin cancer risks. <i>Hawaii Medical Journal</i> . 2010. 69:274-7	Non-UK, no patient outcomes of intervention
K. Choi, D. Lazovich, B. Southwell, J. Forster, S. J. Rolnick, J. Jackson. Prevalence and characteristics of indoor tanning use among men and women in the United States. <i>Archives of Dermatology</i> . 2010. 146:1356-61	Not focused on risk communication; non-UK, no intervention
A. M. Forsea, I. Kovalyshyn, S. W. Dusza, A. C. Halpern. Skin cancer prevention educational resources: just a click away?. <i>Dermatologic Surgery</i> . 2010. 36:1962-7	Non-UK, no patient outcomes of interventions
P. A. Andersen, D. B. Buller, B. J. Walkosz, M. D. Scott, J. A. Maloy, G. R. Cutter, M. D. Dignan. Environmental cues to UV radiation and personal sun protection in outdoor winter recreation. <i>Archives of Dermatology</i> . 2010. 146:1241-7	Not focused on risk communication; non-UK, no intervention
L. C. Pichon, I. Corral, H. Landrine, J. A. Mayer, D. Adams-Simms. Perceived skin cancer risk and sunscreen use among African American adults. <i>Journal of Health Psychology</i> . 2010. 15:1181-9	Not focused on risk communication; non-UK, no intervention
V. Q. Chung, J. S. Gordon, E. Veledar, S. C. Chen. Hot or not--evaluating the effect of artificial tanning on the public's perception of attractiveness. <i>Dermatologic Surgery</i> . 2010. 36:1651-5	Not focused on risk communication; non-UK, no intervention
D. M. Hall, C. Escoffery, E. Nehl, K. Glanz. Spontaneous diffusion of an effective skin cancer prevention program through Web-based access to program materials. <i>Preventing Chronic Disease</i> . 2010. 7:A125	Barriers/facilitators but not UK
H. Cho, S. Lee, K. Wilson. Magazine exposure, tanned women stereotypes, and tanning attitudes. <i>Body Image</i> . 2010. 7:364-7	Non-UK, no intervention
S. Durvasula, C. Kok, P. N. Sambrook, R. G. Cumming, S. R. Lord, L.	Non-UK, no intervention

Bibliographic Information	Exclusion Reason
M. March, R. S. Mason, M. J. Seibel, J. M. Simpson, I. D. Cameron. Sunlight and health: attitudes of older people living in intermediate care facilities in southern Australia. <i>Archives of Gerontology & Geriatrics</i> . 2010. 51:e94-9	
M. Rosenberg, L. Wood. The power of policy to influence behaviour change: daylight saving and its effect on physical activity. <i>Australian & New Zealand Journal of Public Health</i> . 2010. 34:83-8	not primarily related to risk communication
J. N. Harris, J. Hay, A. Kuniyuki, M. M. Asgari, N. Press, D. J. Bowen. Using a family systems approach to investigate cancer risk communication within melanoma families. <i>Psycho-Oncology</i> . 2010. 19:1102-11	pre-intervention baseline data, OECD, high risk of cancer, Suntalk study
M. F. de Maleissye, A. Beauchet, P. Aegerter, P. Saiag, E. Mahe. Parents' attitudes related to melanocytic nevus count in children. <i>European Journal of Cancer Prevention</i> . 2010. 19:472-7	BaF review - Non UK
V. E. Cokkinides, P. Bandi, M. A. Weinstock, E. Ward. Use of sunless tanning products among US adolescents aged 11 to 18 years. <i>Archives of Dermatology</i> . 2010. 146:987-92	Not focused on risk communication; non-UK, no intervention
M. Pertl, D. Hevey, K. Thomas, A. Craig, S. N. Chui-neagain, L. Maher. Differential effects of self-efficacy and perceived control on intention to perform skin cancer-related health behaviours. <i>Health Education Research</i> . 2010. 25:769-79	Non-UK, no intervention
R. Branstrom, N. A. Kasparian, Y. M. Chang, P. Affleck, A. Tibben, L. G. Aspinwall, E. Azizi, O. Baron-Epel, L. Battistuzzi, W. Bergman, W. Bruno, M. Chan, F. Cuellar, T. Debniak, D. Pjanova, S. Ertmanski, A. Figl, M. Gonzalez, N. K. Hayward, M. Hocevar, P. A. Kanetsky, S. A. Leachman, O. Heisele, J. Palmer, B. Peric, S. Puig, D. Schadendorf, N. A. Gruis, J. Newton-Bishop, Y. Brandberg. Predictors of sun protection behaviors and severe sunburn in an international online study. <i>Cancer Epidemiology, Biomarkers & Prevention</i> . 2010. 19:2199-210	Not focused on risk communication; no barriers/facilitators or intervention
L. J. Pavey, P. Sparks. Autonomy and reactions to health-risk information. <i>Psychology & Health</i> . 2010. 25:885-72	no intervention
C. Craciun, N. Schuz, S. Lippke, R. Schwarzer. Risk perception moderates how intentions are translated into sunscreen use. <i>Journal of Behavioral Medicine</i> . 2010. 33:392-8	Not focused on risk communication; non-UK, no intervention
V. A. Andreeva, A. L. Yaroch, J. B. Unger, M. G. Cockburn, R. Rueda, K. D. Reynolds. Moderated mediation regarding the sun-safe behaviors of U.S. Latinos: advancing the theory and evidence for acculturation-focused research and interventions. <i>Journal of Immigrant & Minority Health</i> . 2010. 12:691-8	Not focused on risk communication; non-UK, no intervention
A. Zittermann. The estimated benefits of vitamin D for Germany. <i>Molecular Nutrition & Food Research</i> . 2010. 54:1164-71	Non-UK, no patient outcomes of interventions
L. H. Vu, J. C. van der Pols, D. C. Whiteman, M. G. Kimlin, R. E. Neale. Knowledge and attitudes about Vitamin D and impact on sun protection practices among urban office workers in Brisbane, Australia. <i>Cancer Epidemiology, Biomarkers & Prevention</i> . 2010. 19:1784-9	Non-UK, no intervention
B. Koster, C. Thorgaard, A. Philip, I. H. Clemmensen. Prevalence of sunburn and sun-related behaviour in the Danish population: a cross-sectional study. <i>Scandinavian Journal of Public Health</i> . 2010. 38:548-52	no intervention
C. E. Cheng, B. Irwin, D. Mauriello, L. Hemminger, A. Pappert, A. B. Kimball. Health disparities among different ethnic and racial middle and high school students in sun exposure beliefs and knowledge. <i>Journal of Adolescent Health</i> . 2010. 47:106-9	Not focused on risk communication; non-UK, no intervention
C. Horlitz. Patient education materials in uveal melanoma. <i>Insight (American Society of Ophthalmic Registered Nurses)</i> . 2010. 35:6-9	Not a primary study
C. Horlitz. Patient education materials in uveal melanoma. <i>Insight (American Society of Ophthalmic Registered Nurses)</i> . 2010. 35:6-9	Not patient outcomes after sun protection

Bibliographic Information	Exclusion Reason
	intervention
S. Hunter, K. J. Wells, P. B. Jacobsen, J. H. Lee, D. Boulware, K. Love-Jackson, R. Abdulla, R. G. Roetzheim. Assessment of elementary school students' sun protection behaviors. <i>Pediatric Dermatology</i> . 2010. 27:182-8	pre-intervention baseline data, OECD
J. Matusitz, G. M. Breen. Inoculation theory: a framework for the reduction of skin cancer. <i>Journal of Evidence-Based Social Work</i> . 2010. 7:219-34	Not primary research or systematic review
I. G. Castilho, M. A. Sousa, R. M. Leite. Photoexposure and risk factors for skin cancer: an evaluation of behaviors and knowledge among university students. <i>Anais Brasileiros de Dermatologia</i> . 2010. 85:173-8	Not UK or OECD country (Brazil)
S. S. Mazloomi Mahmoodabad, M. T. Noorbala, Z. Rahae, M. Mohammadi. Knowledge, attitude and performance study of secondary school teachers of Yazd city regarding skin cancer. <i>Journal of the European Academy of Dermatology & Venereology</i> . 2010. 24:424-8	Not focused on risk communication; not UK or OECD country (Iran)
W. E. Zahnd, J. Goldfarb, S. L. Scaife, M. L. Francis. Rural-urban differences in behaviors to prevent skin cancer: an analysis of the Health Information National Trends Survey. <i>Journal of the American Academy of Dermatology</i> . 2010. 62:950-6	Not focused on risk communication; non-UK, no intervention
H. Cho, J. G. Hall, C. Kosmoski, R. L. Fox, T. Mastin. Tanning, skin cancer risk, and prevention: a content analysis of eight popular magazines that target female readers, 1997-2006. <i>Health Communication</i> . 2010. 25:1-10	Content of magazine articles over time; no patient outcomes
A. Gavin, C. Donnelly, A. Devlin, C. Devereux, G. O'Callaghan, G. McElwee, S. Gordon, T. Crossan, N. McMahon, P. Loan, S. Martin, L. McPeak, J. Caughey, A. H. O'Hagan. Public at risk: a survey of sunbed parlour operating practices in Northern Ireland. <i>British Journal of Dermatology</i> . 2010. 162:627-32	No patient outcomes
J. M. Goulart, S. Q. Wang. Knowledge, motivation, and behavior patterns of the general public towards sun protection. <i>Photochemical & Photobiological Sciences</i> . 2010. 9:432-8	Barriers/facilitators but not UK
R. Branstrom, Y. M. Chang, N. Kasparian, P. Affleck, A. Tibben, L. G. Aspinwall, E. Azizi, O. Baron-Epel, L. Battistuzzi, W. Bruno, M. Chan, F. Cuellar, T. Debniak, D. Pjanova, S. Ertmanski, A. Figl, M. Gonzalez, N. K. Hayward, M. Hocevar, P. A. Kanetsky, S. L. Leaf, F. A. van Nieuwpoort, O. Heisele, J. Palmer, B. Peric, S. Puig, A. D. Ruffin, D. Schadendorf, N. A. Gruis, Y. Brandberg, J. Newton-Bishop. Melanoma risk factors, perceived threat and intentional tanning: an international online survey. <i>European Journal of Cancer Prevention</i> . 2010. 19:216-26	Not focused on risk communication; non-UK, no intervention
T. Aspden, D. K. Ingledew, J. A. Parkinson. Motives and health-related behaviours: an investigation of equipotentiality and equifinality. <i>Journal of Health Psychology</i> . 2010. 15:467-79	Not focused on risk communication; not intervention or barriers/facilitators
B. A. Rabin, R. E. Glasgow, J. F. Kerner, M. P. Klump, R. C. Brownson. Dissemination and implementation research on community-based cancer prevention: a systematic review. <i>American Journal of Preventive Medicine</i> . 2010. 38:443-56	Identifies and describes characteristics of primary studies only. No synthesis about sun protection reported
G. Burrish. Extenuating circumstances: indoor tanning: the preventable epidemic. <i>South Dakota Medicine: The Journal of the South Dakota State Medical Association</i> . 2010. 63:61	No intervention
P. R. von Hurst, W. Stonehouse, J. Coad. Vitamin D status and attitudes towards sun exposure in South Asian women living in Auckland, New Zealand. <i>Public Health Nutrition</i> . 2010. 13:531-6	Not focused on risk communication; non-UK, no intervention
P. Bandi, V. E. Cokkinides, M. A. Weinstock, E. Ward. Sunburns, sun	Not focused on risk

Bibliographic Information	Exclusion Reason
protection and indoor tanning behaviors, and attitudes regarding sun protection benefits and tan appeal among parents of U.S. adolescents-1998 compared to 2004. <i>Pediatric Dermatology</i> . 2010. 27:9-18	communication; non-UK, no intervention
S. Murnane. Vitamin D and women's health. <i>Beginnings</i> . 2010. 30:4-5	Intervention: 1st year medical school; not specifically designed to convey info about sun or UV;
T. Gambichler, M. Dissel, P. Altmeyer, S. Rotterdam. Evaluation of sun awareness with an emphasis on ultraviolet protection by clothing: a survey of adults in Western Germany. <i>Journal of the European Academy of Dermatology & Venereology</i> . 2010. 24:155-62	Not focused on risk communication; non-UK, no intervention
L. C. Pichon, I. Corral, H. Landrine, J. A. Mayer, G. J. Norman. Sun-protection behaviors among African Americans. <i>American Journal of Preventive Medicine</i> . 2010. 38:288-95	Not focused on risk communication; non-UK, no intervention
Y. E. Rodvall, C. F. Wahlgren, H. T. Ullen, K. E. Wiklund. Factors related to being sunburnt in 7-year-old children in Sweden. <i>European Journal of Cancer</i> . 2010. 46:566-72	not an intervention, OECD
R. J. Sage, H. W. Lim. Therapeutic Hotline: Recommendations on photoprotection and vitamin D. <i>Dermatologic Therapy</i> . 2010. 23:82-5	No patient outcomes
D. K. Ingledeew, E. Ferguson, D. Markland. Motives and sun-related behaviour. <i>Journal of Health Psychology</i> . 2010. 15:8-20	Not focused on risk communication; not barriers/facilitators or interventions
H. W. Sullivan, L. J. Rutten, B. W. Hesse, R. P. Moser, A. J. Rothman, K. D. McCaul. Lay representations of cancer prevention and early detection: associations with prevention behaviors. <i>Preventing Chronic Disease</i> . 2010. 7:A14	Not focused on risk communication; non-UK, no intervention
D. Haluza, R. Cervinka. Perceived relevance of educative information on public (skin) health: a cross-sectional questionnaire survey. <i>Journal of Preventive Medicine & Public Health / Yebang Uihakhoe Chi</i> . 2013. 46:82-8	not a specific intervention, OECD
J. Brant, C. Arthur, S. Chaudhry, S. Jagwani, P. Ravanfar, S. Youker, S. W. Fosko, L. Cornelius, F. E. Johnson, S. Lickerman. A collaborative skin cancer educational program for adolescents. <i>Missouri Medicine</i> . 2009. 106:226-8	Description of intervention but no outcomes
G. C. Joel Hillhouse, J. K. Thompson, P. B. Jacobsen, J. Hillhouse. Investigating the role of appearance-based factors in predicting sunbathing and tanning salon use. <i>Journal of Behavioral Medicine</i> . 2009. 32:532-44	Non-UK, no intervention
J. J. Yoo. Peer influence on adolescent boys' appearance management behaviors. <i>Adolescence</i> . 2009. 44:1017-31	No intervention
P. K. Han, R. P. Moser, W. M. Klein, E. B. Beckjord, A. C. Dunlavy, B. W. Hesse. Predictors of perceived ambiguity about cancer prevention recommendations: sociodemographic factors and mass media exposures. <i>Health Communication</i> . 2009. 24:764-72	Barriers/facilitators but not UK
R. D. Borschmann, D. Cottrell. Developing the readiness to alter sun-protective behaviour questionnaire (RASP-B). <i>Cancer Epidemiology</i> . 2009. 33:451-62	Not focused on risk communication; questionnaire development
E. Bondurant, K. Hanson. Reducing skin cancer risks. <i>Ncsl Legisbrief</i> . 2009. 17:1-2	Not a systematic review
K. M. Johnson, S. C. Jones, D. Iverson. Guidelines for the development of social marketing programmes for sun protection among adolescents and young adults. <i>Public Health</i> . 2009. 123 Suppl 1:e6-10	Barriers/facilitators but not UK
J. P. McCool, A. I. Reeder, E. M. Robinson, K. J. Petrie, D. F. Gorman. Outdoor workers' perceptions of the risks of excess sun-	Non-UK, no intervention

Bibliographic Information	Exclusion Reason
exposure.[Erratum appears in J Occup Health. 2009;51(6):E2]. Journal of Occupational Health. 2009. 51:404-11	
L. J. Loescher, J. D. Crist, L. Cranmer, C. Curiel-Lewandrowski, J. A. Warneke. Melanoma high-risk families' perceived health care provider risk communication. Journal of Cancer Education. 2009. 24:301-7	majority were melanoma survivors
P. Autier. Sunscreen abuse for intentional sun exposure. British Journal of Dermatology. 2009. 161 Suppl 3:40-5	Non-UK, no intervention
N. A. Kasparian, J. K. McLoone, B. Meiser. Skin cancer-related prevention and screening behaviors: a review of the literature. Journal of Behavioral Medicine. 2009. 32:406-28	Systematic review but no eligible studies
A. I. Reeder, J. A. Jopson, A. Gray. Baseline survey of sun protection policies and practices in primary school settings in New Zealand. Health Education Research. 2009. 24:778-87	Presence of policies in schools but no patient outcomes
N. Stollery. Sun damage. Practitioner. 2009. 253:31-3	Not a systematic review
D. Hall, N. Dubruiel, T. Elliott, K. Glanz. Linking agents' activities and communication patterns in a study of the dissemination of an effective skin cancer prevention program. Journal of Public Health Management & Practice. 2009. 15:409-15	Intervention but no patient outcomes; non-UK
L. Hurd Clarke, A. Korotchenko. Older women and suntanning: the negotiation of health and appearance risks. Sociology of Health & Illness. 2009. 31:748-61	Non-UK, no intervention
E. Mahe, S. Qattini, A. Beauchet, P. Saiag. Web-based resources for sun protection information--a French-language evaluation. European Journal of Cancer. 2009. 45:2160-7	Non-UK; quality of websites but not patient outcomes
J. Arndt, C. R. Cox, J. L. Goldenberg, M. Vess, C. Routledge, D. P. Cooper, F. Cohen. Blowing in the (social) wind: implications of extrinsic esteem contingencies for terror management and health. Journal of Personality & Social Psychology. 2009. 96:1191-205	not a real world intervention
P. A. Andersen, D. B. Buller, B. J. Walkosz, J. Maloy, M. D. Scott, G. R. Cutter, M. B. Dignan. Testing a theory-based health communication program: a replication of Go Sun Smart in outdoor winter recreation. Journal of Health Communication. 2009. 14:346-65	skiing
K. P. Tercyak, A. A. Abraham, A. L. Graham, L. D. Wilson, L. R. Walker. Association of multiple behavioral risk factors with adolescents' willingness to engage in eHealth promotion. Journal of Pediatric Psychology. 2009. 34:457-69	No patient outcomes of intervention; non-UK
C. Escoffery, K. Glanz, D. Hall, T. Elliott. A multi-method process evaluation for a skin cancer prevention diffusion trial. Evaluation & the Health Professions. 2009. 32:184-203	describes the process of the PoolCool intervention, but not the results
L. Naldi, F. Sassi. Evaluation of patient education. Cancer Treatment & Research. 2009. 146:417-23	Non-systematic review
L. J. Loescher, J. D. Crist, L. A. Siaki. Perceived intrafamily melanoma risk communication. Cancer Nursing. 2009. 32:203-10	Non OECD
M. Kull, R. Kallikorm, M. Lember. Body mass index determines sunbathing habits: implications on vitamin D levels. Internal Medicine Journal. 2009. 39:256-8	Non-UK, no intervention
M. Hemmelgarn. Shedding light on vitamin D. American Journal of Nursing. 2009. 109:19-20	not a SR or primary study
C. Redeker, J. Wardle, D. Wilder, S. Hiom, A. Miles. The launch of Cancer Research UK's 'Reduce the Risk' campaign: baseline measurements of public awareness of cancer risk factors in 2004. European Journal of Cancer. 2009. 45:827-36	no intervention; baseline measurement of public awareness;
S. L. Pagoto, K. L. Schneider, J. Oleski, J. S. Bodenlos, P. Merriam, Y. Ma. Design and methods for a cluster randomized trial of the Sunless Study: a skin cancer prevention intervention promoting sunless tanning among beach visitors. BMC Public Health. 2009. 9:50	Design of a trial only; no outcomes
L. F. Rutten, B. W. Hesse, R. P. Moser, K. D. McCaul, A. J. Rothman. Public perceptions of cancer prevention, screening, and survival:	Non-UK, no intervention

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comparison with state-of-science evidence for colon, skin, and lung cancer. <i>Journal of Cancer Education</i> . 2009. 24:40-8	
B. V. Nolan, S. R. Feldman. Ultraviolet tanning addiction. <i>Dermatologic Clinics</i> . 2009. 27:109-12, v	Non-systematic review
M. A. Adams, J. A. Mayer, D. J. Bowen and M. Ji. Season of interview and self-report of summer sun protection behaviors. <i>Cancer Causes & Control</i> . 2009. 20:153-62	Non-UK, no intervention
C. J. Heckman, D. B. Wilson and K. S. Ingersoll. The influence of appearance, health, and future orientations on tanning behavior. <i>American Journal of Health Behavior</i> . 2009. 33:238-43	Non-UK (USA), no intervention
A. Bakija-Konsuo and R. Mulic. Educating people about importance of photoprotection: results of campaign on the islands in Dubrovnik area. <i>Collegium Antropologicum</i> . 2008. 32 Suppl 2:189-93	Intervention but not OECD country (Croatia)
M. Scully, M. Wakefield and H. Dixon. Trends in news coverage about skin cancer prevention, 1993-2006: increasingly mixed messages for the public. <i>Australian & New Zealand Journal of Public Health</i> . 2008. 32:461-6	Content of newspaper articles; no patient outcomes
E. W. Hossler and M. P. Conroy. YouTube as a source of information on tanning bed use. <i>Archives of Dermatology</i> . 2008. 144:1395-6	Content of YouTube videos; no patient outcomes
S. B. Jones, K. Beckmann and J. Rayner. Australian primary schools' sun protection policy and practice: evaluating the impact of the National SunSmart Schools Program. <i>Health Promotion Journal of Australia</i> . 2008. 19:86-90	Intervention but outcomes are school policies not individual knowledge, attitudes or behaviour
N. Priest, R. Armstrong, J. Doyle and E. Waters. Policy interventions implemented through sporting organisations for promoting healthy behaviour change. <i>Cochrane Database of Systematic Reviews</i> . 2008. :CD004809	SR - no included studies; no outcome data
C. Escoffery, K. Glanz and T. Elliott. Process evaluation of the Pool Cool Diffusion Trial for skin cancer prevention across 2 years. <i>Health Education Research</i> . 2008. 23:732-43	process evaluation for PoolCool, no results, OECD
V. A. Andreeva, K. D. Reynolds, D. B. Buller, C. P. Chou and A. L. Yaroch. Concurrent psychosocial predictors of sun safety among middle school youth. <i>Journal of School Health</i> . 2008. 78:374-81; quiz 408-10	Non-UK, no intervention
N. Pakrou, R. Casson, S. Fung, N. Ferdowsi, G. Lee and D. Selva. South Australian adolescent ophthalmic sun protective behaviours.[Erratum appears in <i>Eye</i> . 2008 Jul;22(7):982]. <i>Eye</i> . 2008. 22:808-14	Non-UK, no intervention
H. M. Marshall, A. M. Reinhart, T. H. Feeley, F. Tutzauer and A. Anker. Comparing college students' value-, outcome-, and impression-relevant involvement in health-related issues. <i>Health Communication</i> . 2008. 23:171-83	Non-UK, no intervention
G. Cafri, J. K. Thompson, M. Roehrig, A. Rojas, S. Sperry, P. B. Jacobsen and J. Hillhouse. Appearance motives to tan and not tan: evidence for validity and reliability of a new scale. <i>Annals of Behavioral Medicine</i> . 2008. 35:209-20	Non-UK barriers and facilitators
R. Greinert, E. W. Breitbart, P. Mohar and B. Volkmer. Health initiatives for the prevention of skin cancer. <i>Advances in Experimental Medicine & Biology</i> . 2008. 624:125-36	Not systematic review or primary study
A. Emmett, T. Uchida and R. F. Wagner, Jr.. Sunburn risk factors for beachgoing children. <i>Dermatology Online Journal</i> . 2008. 14:28	No Intervention
K. A. Mallett, J. K. Robinson and R. Turrisi. Enhancing patient motivation to reduce UV risk behaviors: assessing the interest and willingness of dermatologists to try a different approach. <i>Archives of Dermatology</i> . 2008. 144:265-6	Non-UK, no intervention
S. P. Poorsattar and R. L. Hornung. Television turning more teens toward tanning?. <i>Journal of the American Academy of Dermatology</i> .	Non-UK, no intervention

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2008. 58:171-2	
R. A. Young, C. Logan, C. Y. Lovato, B. Moffat and J. A. Shoveller. Sun protection as a family health project in families with adolescents. <i>Journal of Health Psychology</i> . 2005. 10:333-44	Non-UK Barriers and facilitators
K. Diehl, C. Bock, E. W. Breitbart, R. Greinert and S. Schneider. Building awareness of the health risks of sunbed use: Identification of target groups for prevention. <i>Photodermatology Photoimmunology and Photomedicine</i> . 2013. 29:291-299	Non-UK, no intervention
M. Mitka. Survey finds physicians rarely advise use of sunscreen to patients, even those most at risk for skin cancer. <i>JAMA - Journal of the American Medical Association</i> . 2013. 310:1328	Editorial not primary study
T. E. Naquin. A systematic review of literature identifying young women's knowledge and exposure to tanning beds. <i>Journal of the Dermatology Nurses' Association</i> . 2013. 5:197-203	No outcomes of interest: Has pre existing knowledge, but not in intermediaries
S. N. Williams. A tax on indoor tanning would reduce demand in Europe. <i>BMJ (Clinical research ed.)</i> . 2012. 345:	No patient outcomes
S. C. Banerjee, J. L. Hay and K. Greene. College students' cognitive rationalizations for tanning bed use: An exploratory study. <i>Archives of Dermatology</i> . 2012. 148:761-762	Non-UK, no intervention
A. M. Hartman, F. M. Perna, D. M. Holman, Z. Berkowitz, G. P. Guy, M. Saraiya and M. Plescia. Sunburn and sun protective behaviors among adults aged 18-29 years - United States, 2000-2010. <i>Morbidity and Mortality Weekly Report</i> . 2012. 61:317-322	non-UK, no intervention
J. E. Nanyes, J. M. McGrath and J. Krejci-Manwaring. Medical students' perceptions of skin cancer: Confusion and disregard for warnings and the need for new preventive strategies. <i>Archives of Dermatology</i> . 2012. 148:392-393	non-UK, no intervention
B. Adinoff. Should we be targeting potential addictive behaviors in tanning bed users?. <i>Neuropsychiatry</i> . 2012. 2:1-4	non-UK, no intervention
K. A. Mallett, R. Turrisi, K. Guttman, A. Read, E. Billingsley and J. Robinson. Assessing dermatologists' ability to deliver a novel intervention to improve patients' use of sun protection: The ABC method of physician-patient communication. <i>Archives of Dermatology</i> . 2011. 147:1451-1453	Intervention but no patient outcomes
M. K. Barton. Sunscreen use in adults is beneficial in preventing melanoma. <i>CA: a cancer journal for clinicians</i> . 2011. 61:137-138	Not primary study
L. Dawson, A. A. Hamstra, L. S. Huff, R. G. Gamble, W. Howe, I. Kane and R. P. Dellavalle. Oe videos to promote sun safety: Results of a contest. <i>Dermatology Reports</i> . 2011. 3:	Intervention but no patient outcomes
A. R. Dominguez and A. G. Pandya. Need for more education for latinos regarding sun-safe behaviors. <i>Archives of Dermatology</i> . 2011. 147:820	This is a non-systematic review
P. D. Baade, A. C. Green, B. M. Smithers and J. F. Aitken. Trends in melanoma incidence among children: Possible influence of sun-protection programs. <i>Expert Review of Anticancer Therapy</i> . 2011. 11:661-664	Editorial
A. E. Macbeth, D. J. C. Grindlay and H. C. Williams. What's new in skin cancer? An analysis of guidelines and systematic reviews published in 2008-2009. <i>Clinical and Experimental Dermatology</i> . 2011. 36:453-458	Not intervention or barriers/facilitators
S. S. Patel, R. I. Nijhawan, S. Stechschulte, Y. Parmet, P. Rouhani, R. S. Kirsner and S. Hu. Skin cancer awareness, attitude, and sun protection behavior among medical students at the University of Miami Miller School of Medicine. <i>Archives of Dermatology</i> . 2010. 146:797-800	Non-UK, no intervention
J. M. Martin, J. M. Ghaferi, D. L. Cummins, A. J. Mamelak, C. D. Schmults, M. Parikh, L. A. Speyer, A. Chuang, H. V. Richardson, D.	Non-UK, no intervention, no patient outcomes

Bibliographic Information	Exclusion Reason
Stein and N. J. Liegeois. Changes in skin tanning attitudes. Fashion articles and advertisements in the early 20th century. <i>American journal of public health</i> . 2009. 99:2140-2146	
R. Tucker. Giving advice on sun safety: Part II. <i>Pharmaceutical Journal</i> . 2009. 282:419-422	Non-systematic review
A. A. McClung, T. Uchida and R. F. Wagner Jr. Body dysmorphic disorder and substance-related disorder among indoor tanners. <i>Skin Cancer</i> . 2008. 23:17-22	Not a UK barriers/facilitators study
T. Poonawalla, T. Uchida and R. F. Wagner Jr. Incorporating ethnicity into a high school sunburn prevention program. <i>Skin Cancer</i> . 2008. 23:9-16	Not a SR or RCT
S. Aquilina, L. Scerri, N. Calleja and A. Amato-Gauci. Trends in sun exposure awareness and protection practices in Malta: 1999-2004. <i>Malta Medical Journal</i> . 2008. 20:6-11	Non-UK, no intervention
V. Bataille and E. De Vries. Melanoma - Part 1: Epidemiology, risk factors, and prevention. <i>Bmj</i> . 2008. 337:1287-1291	Not intervention or barriers/facilitators; no patient outcomes
G. J. Hollands, M. Hankins, A. Van Den Heuvel and T. M. Marteau. Visual feedback of the individual's medical imaging results for changing health behaviours in clinical and non-clinical populations. <i>Cochrane Database of Systematic Reviews</i> . 2008. (4):	Protocol for SR only; no data/outcomes
C. M. Moriarty and J. E. Stryker. Prevention and screening efficacy messages in newspaper accounts of cancer. <i>Health Education Research</i> . 2008. 23:487-498	No patient outcomes
M. A. Weinstock. The Struggle for Primary Prevention of Skin Cancer. <i>American Journal of Preventive Medicine</i> . 2008. 34:171-172	Editorial/commentary
J. Hollands Gareth, D. Cameron Linda, A. Crockett Rachel and M. Marteau Theresa. Presentation of aversive visual images in health communication for changing health behaviour. . 2011. :	Protocol for a SR only; no data/outcomes
M. F. Maleissye, A. Beauchet, P. Saiag, M. Correa, S. Godin-Beeckmann, M. Haeffelin and E. Mahe. Sunscreen use and melanocytic nevi in children: a systematic review (Provisional abstract). . 2013. :51-59	No intervention
. Cancer reform strategy: achieving local implementation - second annual report. . 2009. :	cancer strategy but no patient outcomes
. Cancer reform strategy: maintaining momentum, building for the future - first annual report. . 2008. :	No patient outcomes
V. Araujo-Soares, A. Rodrigues, J. Pesseau and F. Sniehotta. Adolescent sunscreen use in springtime: A prospective predictive study informed by a belief elicitation investigation. <i>Journal of Behavioral Medicine</i> . 2013. 36:109-123	Non-UK, no intervention
M. Santiago Rivas. Testing the mechanisms of change for sun protection behavior. <i>Dissertation Abstracts International: Section B: The Sciences and Engineering</i> . 2013. 74:No Pagination Specified	Non-UK, no patient outcomes of interventions
N. Lewis. Priming effects of perceived norms on behavioral intention through observability. <i>Journal of Applied Social Psychology</i> . 2013. 43:E97-E108	Non-UK, no intervention
J. Spas. Multiple health behavior risks: Redefining co-action and investigating multiple health behavior change using the transtheoretical model. <i>Dissertation Abstracts International: Section B: The Sciences and Engineering</i> . 2013. 73:No Pagination Specified	No outcomes of interest
K. M. Gallagher and J. A. Updegraff. Health message framing effects on attitudes, intentions, and behavior: A meta-analytic review. <i>Annals of Behavioral Medicine</i> . 2012. 43:101-116	Not focused on sunlight/UV exposure
R. Borschmann, K. Lines and D. Cottrell. Sun protective behaviour, optimism bias, and the transtheoretical model of behaviour change. <i>Australian Journal of Psychology</i> . 2012. 64:181-188	Non=UK, no intervention
J. Stone and N. Fernandez. When thinking about less failure causes	Non-UK, no intervention

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more dissonance: The effect of elaboration and recall on behavior change following hypocrisy. <i>Social Influence</i> . 2011. 6:199-211	
J.-J. Yoo and H.-Y. Kim. Adolescents' body-tanning behaviours: Influences of gender, body mass index, sociocultural attitudes towards appearance and body satisfaction. <i>International Journal of Consumer Studies</i> . 2012. 36:360-366	Non-UK, no intervention
J. Kenway and E. Bullen. Skin pedagogies and abject bodies. <i>Sport, Education and Society</i> . 2011. 16:279-294	not a SR or primary study
A. R. W. Bequette. We can work it out: An examination of Terror Management Theory and Sociometer Theory in a health examination. <i>Dissertation Abstracts International: Section B: The Sciences and Engineering</i> . 2011. 71:6486	Not a UK barriers and facilitators study
J. S. Fulmore. Development of an instrument to assess the predisposing factors of sun protection with adolescent athletes: An exploratory mixed methods study. <i>Dissertation Abstracts International Section A: Humanities and Social Sciences</i> . 2010. 71:99	Non-UK barriers and facilitators
A. Adams. The relationship among illness representations, risk representations, empathy, and preventive health behaviors. <i>Dissertation Abstracts International: Section B: The Sciences and Engineering</i> . 2010. 70:5885	not an intervention study, a validation study
J. K. Robinson. Consider tanning motivations and counsel accordingly. <i>JAMA: Journal of the American Medical Association</i> . 2010. 303:2074-2075	Commentary
V. Siegel. Student nurse knowledge of skin cancer, sun protective behaviors, perceptions of acquiring skin cancer, and the role of the nurse in skin cancer prevention. <i>Dissertation Abstracts International: Section B: The Sciences and Engineering</i> . 2009. 70:2839	non-UK barriers and facilitators
S. L. Leaf. Do the right thing: Anticipated affect as a guide to behavioral choice. <i>Dissertation Abstracts International: Section B: The Sciences and Engineering</i> . 2009. 69:7160	Non-UK barriers and facilitators
J. C. Mowen, A. Longoria and A. Sallee. Burning and cutting: Identifying the traits of individuals with an enduring propensity to tan and to undergo cosmetic surgery. <i>Journal of Consumer Behaviour</i> . 2009. 8:238-251	Not an SR or RCT
M. D. Scott, D. B. Buller, B. J. Walkosz, P. A. Andersen, G. R. Cutter and M. B. Dignan. Go Sun Smart. <i>Communication Education</i> . 2008. 57:423-433	Focused on skiers
L. Van Osch, A. Reubsat, L. Lechner, M. Candel, L. Mercken and H. De Vries. Predicting parental sunscreen use: Disentangling the role of action planning in the intention-behavior relationship. <i>Psychology & Health</i> . 2008. 23:829-847	no intervention; survey of attitudes, knowledge and behaviour
S. Nhs, Scotl and G. Scottish. Prevention of ill health in older people: an economic analysis. . 2011. :	Not sunlight/UV intervention
I. Jenny and P. Barbara. The health needs of the Somali community in Bristol. <i>Community Practitioner</i> . 2009. 82:26-29 2009	No intervention
C. Scott, J. Hillhouse and R. Turrisi. Student Column Evaluating A Theoretical Model Of Indoor Tanning Using Structural Equation Modeling. <i>Public Health Reports</i> . 2014. 129:107-110	Non-UK, no intervention
A. J. Blashill and L. Traeger. Indoor Tanning Use Among Adolescent Males: The Role of Perceived Weight and Bullying. <i>Annals of Behavioral Medicine</i> . 2013. 46:232-236	Non-UK, no intervention
P. S. Worley. Knowledge and attitudes to sun exposure among adolescents in Korinthos, Greece (Retraction of vol 9, 1162, 2009). <i>Rural and Remote Health</i> . 2013. 13:	Non-UK, no intervention
O. Kiriaev, H. C. Wong, H. Astell, N. Whitehead, S. Paul and S. Sankaran. Vitamin D prescription, education interventions, and falls in south Auckland aged related residential care facilities. <i>Australasian Journal on Ageing</i> . 2012. 31:19-20	Abstract only

Bibliographic Information	Exclusion Reason
E. J. Coups, J. Stapleton, S. V. Hudson, A. Medina-Forrester, J. S. Goydos and A. Natale-Pereira. Sun Protection Behaviors and Skin Cancer Screening among Hispanic Adults. <i>Annals of Behavioral Medicine</i> . 2012. 43:S161-S161	no intervention; simple survey of attitudes and knowledge;
K. L. Schneider, S. L. Pagoto, E. Panza and D. Goldberg. Elevated Rates of Tanning Dependence and Skin Cancer Risk Behaviors in Physically Active Individuals. <i>Annals of Behavioral Medicine</i> . 2012. 43:S173-S173	conference abstract only
V. Allom and B. Mullan. Cognitive flexibility increases the predictive validity of the Theory of Planned Behaviour for sun-protection behaviours. <i>Psychology & Health</i> . 2012. 27:3-4	study published in abstract form only
K. Morris, A. Swinbourne and S. Harrison. Sun in the tropics: Attitudes surrounding incidental sun exposure in North Queensland. <i>Psychology & Health</i> . 2012. 27:281-281	Abstract only
K. White, K. Hamilton, R. Young, A. Hawkes, L. Starfelt and S. Leske. Identifying critical sun-protective beliefs among Australian adults. <i>Psychology & Health</i> . 2012. 27:350-350	no intervention; survey of attitudes and behaviours;
M. Stock, L. Walsh and L. Peterson. Sun Protection Reactions to Uv Photography among Younger Versus Older Women: Emotional Reactions Versus Cognitive Thinking. <i>Annals of Behavioral Medicine</i> . 2011. 41:S158-S158	conference abstract only;
R. Angela, A. S. Vera and S. Falko. Interventions promoting sun-protective behaviours: An analysis of effective behaviour change techniques and modes of delivery. <i>Psychology & Health</i> . 2011. 26:55-55	conference abstract only
W. Katherine, Y. Ross, L. Stuart and H. Anna. Psychosocial influences determining Australians' sun safe practices: Testing an extended theory of planned behaviour. <i>Psychology & Health</i> . 2011. 26:238-238	conference abstract only
S. Keeney, H. McKenna, P. Fleming and S. McIlfatrick. Attitudes to cancer and cancer prevention: what do people aged 35-54 years think?. <i>European Journal of Cancer Care</i> . 2010. 19:769-777	No intervention
C. Craciun, C. Mallach, S. Lippke and R. Schwarzer. Beyond intention: Risk perception moderates how intentions are translated into sunscreen use. <i>Psychology & Health</i> . 2010. 25:24-24	No intervention
D. B. Buller, P. Andersen, B. Walkosz, M. Scott, M. Dignan, G. Cutter, I. Kane and X. A. Zhang. Effective Strategies for Disseminating a Workplace Sun Safety Program. <i>Annals of Behavioral Medicine</i> . 2010. 39:60-60	Abstract only
N. B. Henrikson and D. Bowen. Socioeconomic Disparities in Sun Protection Behavior and Screening. <i>Annals of Behavioral Medicine</i> . 2010. 39:131-131	abstract only
M. Santiago-Rivas, W. F. Velicer, C. A. Redding, J. O. Prochaska and A. L. Paiva. Cluster Subtypes within the Precontemplation Stage of Change for Sun Protection Behavior. <i>Annals of Behavioral Medicine</i> . 2010. 39:167-167	abstract only
L. Pichon, I. Corral, H. Landrine, J. Mayer and D. Adams-Simms. Perceived Skin Cancer Risk among a Community-Based Sample of Black Adults. <i>Annals of Behavioral Medicine</i> . 2010. 39:209-209	Abstract only
M. Dickie and S. Gerking. Family Behavior: Implications for Health Benefits Transfer from Adults to Children. <i>Environmental & Resource Economics</i> . 2009. 43:31-43	No intervention
P. A. Andersen, D. B. Buller, J. H. Voeks, B. J. Walkosz, M. D. Scott, G. R. Cutter and M. B. Dignan. Testing the long-term effects of the Go Sun Smart worksite health communication campaign: A group-randomized experimental study. <i>Journal of Communication</i> . 2008. 58:447-471	Skiing excluded
L. M. Robertson, F. Douglas, A. Ludbrook, G. Reid and E. van Teijlingen. What works with men? A systematic review of health	SR - only 1 study on skin cancer and outcome is

Bibliographic Information	Exclusion Reason
promoting interventions targeting men. <i>Bmc Health Services Research</i> . 2008. 8:	attendance at screening, not our listed outcomes
N. Mallach and M. Eid. Skin cancer prevention for adolescents: Theory-based determinants for behavioral interventions. <i>International Journal of Psychology</i> . 2008. 43:151-151	Abstract only
J. L. Dykstra, M. Gerrard and F. X. Gibbons. Avoiding reactance: The utility of ultraviolet photography, persuasion, and parental protectiveness in improving the effectiveness of a UV exposure intervention. <i>Annals of Behavioral Medicine</i> . 2008. 35:S198-S198	Abstract only
N. C. Fernandez, J. Stone, J. Cooper, E. Cascio and M. Hogg. Vicarious hypocrisy: Bolstering attitudes towards the regular use of sunscreen to reduce dissonance after exposure to a hypocritical ingroup member. <i>Annals of Behavioral Medicine</i> . 2008. 35:S75-S75	Abstract only
E. Jennings, J. Whiteley, B. Marcus-Blank and M. Weinstock. Physical activity and sun protection behaviors in a randomized controlled physical activity trial. <i>Annals of Behavioral Medicine</i> . 2008. 35:S15-S15	Abstract only
J. Stapleton, N. R. Mastroleo, A. E. Ray and R. Turrisi. Changing resistant health behaviors: Use of a motivational interviewing approach to reduce indoor tanning behavior in college females. <i>Annals of Behavioral Medicine</i> . 2008. 35:S195-S195	Abstract only
M. Jonathan and B. Gerald-Mark. Inoculation theory: a framework for the reduction of skin cancer. <i>Journal of Evidence-Based Social Work</i> . 2010. 7:219-234	No patient outcomes
M. Saridi, E. Bourdaki and M. Rekleiti. Young students' knowledge about sun protection and its relation with sunburn incidence. A systematic review. <i>Health Science Journal</i> . 2014. 8:4-21	Not outcomes of interventions
S. J. Dobbinson, K. Jansen, H. G. Dixon, M. J. Spittal, M. Lagerlund, J. E. Lipscomb, N. L. Herd, M. A. Wakefield and D. J. Hill. Assessing population-wide behaviour change: concordance of 10-year trends in self-reported and observed sun protection. <i>International Journal of Public Health</i> . 2014. 59:157-166	Not outcome of intervention
A. Williams, S. Grogan, D. Clark-Carter and E. Buckley. British adolescents' sun protection and UV exposure awareness. <i>British Journal of School Nursing</i> . 2013. 8:436-441	No intervention
S. Everett Jones, E. O'Malley Olsen, S. L. Michael and M. Saraiya. Association of UV Index and Sunscreen Use Among White High School Students in the United States. <i>Journal of School Health</i> . 2013. 83:750-756	No intervention
J. E. Moan, Z. Baturaite, M. Grigalavicius and A. Juzeniene. Sunbed use and cutaneous melanoma in Norway. <i>Scandinavian Journal of Public Health</i> . 2013. 41:812-817	No intervention
D. A. Strayer and T. Schub. Melanoma: Sunscreen Use. . 2013. :2p	Teaching material
D. A. Strayer and T. Schub. Melanoma: Risk Factors and Prevention. . 2013. :2p	Teaching materials
A. Collins. Practice implications for preventing population vulnerability related to vitamin D status. <i>Journal of the American Association of Nurse Practitioners</i> . 2013. 25:109-118	non-systematic review
H. Andrews. Skin and sun awareness and skin cancer prevention. <i>British Journal of Healthcare Assistants</i> . 2012. 6:582-588	report; no intervention;
Jonathan, R. Ruiter and H. De Vries. Preaching to the choir? The influence of personal relevance on the effects of gain- and loss-framed health-promoting messages. <i>Journal of Health Psychology</i> . 2012. 17:712-723	Not related to sun exposure
J. Gold, M. e. Hellard, M. S. Lim, H. Dixon, M. Wakefield and C. K. Aitken. Public-Private Partnerships for Health Promotion: The Experiences of the S&t;sup&t;5&t;/sup&t; Project. <i>American Journal of Health Education</i> . 2012. 43:250-253	Paper talks about challenges of this study; no results provided.

Bibliographic Information	Exclusion Reason
M. Townend. Factors to consider when offering pre-travel ski advice. <i>Practice Nursing</i> . 2013. 24:142-144	A health report; no study involved.
C. Wood. Sun and skin - Is travel health advice needed?. <i>Travel Medicine & Infectious Disease</i> . 2013. 11:438-439	A commentary - not a study
A. Gupta and B. A. Cohen. Ultraviolet Radiation Exposure And Melanoma Providing Safer Skin Practices For Children. <i>Contemporary Pediatrics</i> . 2012. 29:10-14	not a SR or primary study
V. A. Russo, M. M. Van Acker, J. S. Vander Wal and A. A. Sinha. Patterns of use of sunless tanning product alternatives to indoor tanning among female college students. <i>Archives of Dermatology</i> . 2012. 148:855-857	no intervention, OECD
C. Knight. Looking at skin cancer and effective sun protection. <i>British Journal of School Nursing</i> . 2011. 6:220-224	not a SR or primary study
C. Caple and T. Schub. Melanoma: Effect of Education. . 2012. :2p	Teaching material
A. Mahoney, S. M. Swetter, K. B. Biello, E. A. Resnick, I. Feuerstein and A. C. Geller. Attitudes toward indoor tanning among users of sunless tanning products. <i>Archives of Dermatology</i> . 2012. 148:124-126	no intervention, OECD
H. Cho and N. Carcioppolo. Exploring the relationship between genre-specific television viewing and tanning beliefs and attitudes. <i>International Public Health Journal</i> . 2011. 3:53-61	cross sectional study, no intervention, OECD
C. Calianno. Influencing melanoma prevention. <i>Nurse Practitioner</i> . 2011. 36:6-10	not a SR or primary study
R. Dobson, U. C. Meier, M. Marta, S. Ramagopalan and G. Giovannoni. Vitamin D deficiency - do we follow our own advice?. <i>Clinical Medicine</i> . 2011. 11:521-523	assesses vitmain D levels as a sign of sun exposure, but does not report on any other outcome or barriers/facilitators
M. Felts, S. C. Burke, K. Vail-Smith and L. M. Whetstone. College students' knowledge, attitudes and perceptions of risks regarding intentional sun exposure: a 17-Year follow-up. <i>American Journal of Health Education</i> . 2010. 41:274-283	survey; no intervention
L. Wilson, S. Quine and M. Lewis. Hiding under the blankets: reasons why parents cover infants' strollers and prams. <i>Neonatal, Paediatric & Child Health Nursing</i> . 2010. 13:13-17	BaF Non UK
S. Silcox. Constructing a skin cancer campaign. <i>Occupational Health</i> . 2011. 63:20-22	Editorial not primary study
C. Knight. A basic guide to avoiding sunburn. <i>Practice Nurse</i> . 2011. 41:32-34	Guidelines, not a study
J. Croswell and Y. R. Shin. Behavioral counseling to prevent skin cancer. <i>American Family Physician</i> . 2012. 86:773-774	not a study; no intervention
E. J. Coups, C. J. Heckman and S. L. Manne. Melanoma risk and preventive behaviors among men and women... <i>Am J Surg</i> . 2010 Dec;200(6):765-8, discussion 768-9. <i>American Journal of Surgery</i> . 2012. 204:551-552	letter to the editor
S. Bird. Skin cancer prevention and teenagers: the role of schools. <i>Education & Health</i> . 2011. 29:8-10	review, not a study; no intervention
J. Imahiye-robo-Ip, I. Ip, S. Jamal, U. Nadiminti and M. Sanchez. Skin cancer awareness in communities of color. <i>Journal of the American Academy of Dermatology</i> . 2011. 64:198-200	survey; no intervention;
H. Cooper. Beat the heat: stay safe under the summer sun. <i>Alive: Canada's Natural Health & Wellness Magazine</i> . 2010. :51-53	Not a study design of interest
A. Willcox. Sun exposure. <i>Practice Nursing</i> . 2008. 19:449-452	report; not a study; no intervention
J. E. Fielding and S. M. Teutsch. Skin cancer prevention: sunnyside up or scrambled?. <i>JNCI: Journal of the National Cancer Institute</i> . 2010. 102:445-447	editorial - check we have identified Hunter to which this editorial refers
N. W. Burkhart. Sun exposure or tanning beds?. <i>RDH</i> . 2012. 32:90-	not patient outcomes of

Bibliographic Information	Exclusion Reason
91	intervention
J. Kreisberg. Preparing patients for proper sun exposure [corrected] [published erratum appears in INTEGR MED CLIN J 2009 Dec-2010 Jan;8(6):10]. Integrative Medicine: A Clinician's Journal. 2009. 8:52-54	Editorial not primary study
S. Cumberland and C. Jurberg. From Australia to Brazil: sun worshippers beware. Bulletin of the World Health Organization. 2009. 87:574-576	report; not a study; no intervention;
T. A. Garberg. Understanding students' indoor tanning practices and beliefs. . 2008. :	Student behaviour and beliefs about indoor tanning in the US
A. Bozievich. Bringing change through education... Rachel Scobee. NEWS-Line for Nurse Practitioners. 2008. 14:4-7	not a SR or primary study
B. Diffey. Ultraviolet A sunbeds and vitamin D. Journal of the American Academy of Dermatology. 2011. 65:1059-1060	no intervention, letter
M. Fillon. Dermatologists start skin cancer awareness initiative. JNCI: Journal of the National Cancer Institute. 2012. 104:1272-1272	news article; no intervention;
E. J. Coups. Rural-urban differences in sunscreen use: clarification of results from the 2005 Health Information National Trends Survey... J Am Acad Dermatol. 2010 Jun;62(6):950-6. Journal of the American Academy of Dermatology. 2011. 64:196-197	no intervention, letter, OECD
G. Kenyon. Experts call for urgent skin-cancer awareness campaigns in Chile. Lancet Oncology. 2009. 10:319-320	not a SR or primary study
J. Jesitus. Tackling tanning: FTC throttles ITA campaign, but derms say battle continues. Dermatology Times. 2010. 31:22-22	not a SR or primary study
J. L. W. Fink. Texting increases sunscreen usage. RN. 2009. 72:14-14	news item
E. Croghan. Sun safety and risky behaviour. British Journal of School Nursing. 2008. 3:160-160	not a SR or primary study
C. Duffin. Booklet alters sunbed habits. Cancer Nursing Practice. 2008. 7:4-4	News
Sunburn survey leaves men red faced. . 2011. :	news article
British Association of Dermatologists. A summary of key messages to be included in public information resources for the primary prevention of skin cancer.. . 2009. :	SR of key messages regarding sun exposure for public health; no intervention;
N. Bowtell and J. Verne. Summary of current policy drivers and national practice overview. . 2010. :	Non-systematic review about health policy and funding related to skin cancer in the UK
N. Bowtell and J. Verne. Physical activity and the school environment. . 2010. :	Non-systematic review
L. Eagle, G. Kemp, J. Verne and S. Jones. The Impact of Role Models on Sun Protective Behaviours: Expert Paper. . 2010. :	Non-systematic review
Royal Australian College of General Practitioners. Guidelines for preventive activities in general practice. . 2012. :	General practice guideline, not specifically about sun protection/awareness
J. Wood. The Impact Of A Health Promotion Campaign To Raise Awareness Amongst Young People Of The Risks Associated With Sun Bed Use On Mental Well-Being. . 2008. :	Non-systematic review
Case study: Safer Sun Initiative - Wandsworth local authority. . 2011. :	No evaluation of outcomes, barriers or facilitators
L. Eagle, G. A. Kemp and A. Tapp. Social Marketing-Based Strategy For Sun Protection Interventions Report Prepared For The South West Public Health Observatory. . 2008. :	Non-systematic review
South West Public Health Observatory. Health behaviour outcome: skin cancer awareness and early diagnosis. . 2010.	Information sheet provided to schools

Bibliographic Information	Exclusion Reason
The Bronze Debate: Looking Gold Verses Getting Old. 2010.	UK study; survey of attitudes-knowledge; no intervention;
SunSmart and Cancer Council Victoria. Skin cancer prevention: A blue chip investment in Victoria. 2008. :	Evaluation of SunSmart program in Victoria, Australia
SunSmart and Cancer Council Victoria. SunSmart Program Report 2009-2013. . 2013.	Summary of SunSmart campaign in Victoria. Australia
S. Dobbinson. Reaction to the 1999/2000 SunSmart Campaign: results from a telephone survey of Victorians and a retail intercept survey of young people.	Pre 2008
Cook N, Hart A, Nuttall K, Simpson K, Turnill N, Grant-Pearce C, et al. A telephone survey of cancer awareness among frontline staff: informing training needs. Br. J. Cancer. 2011;105(3):340-5. DOI: http://dx.doi.org/10.1038/bjc.2011.258 .	Not SR or RCT
Falk M, Anderson CD. Measuring sun exposure habits and sun protection behaviour using a comprehensive scoring instrument--an illustration of a possible model based on Likert scale scorings and on estimation of readiness to increase sun protection. Cancer Epidemiol. 2012;36(4):e265-9. DOI: http://dx.doi.org/10.1016/j.canep.2012.03.004 .	Not RCT; development of a questionnaire
Gaber R, Desai S, Smith M, Eilers S, Blatt H, Guevara Y, et al. Communication by mothers with breast cancer or melanoma with their children. International Journal of Environmental Research & Public Health [Electronic Resource]. 2013;10(8):3483-501. DOI: http://dx.doi.org/10.3390/ijerph10083483 .	At data extraction proved not an RCT or SR
Glanz K, Volpicelli K, Kanetsky PA, Ming ME, Schuchter LM, Jepson C, et al. Melanoma genetic testing, counseling, and adherence to skin cancer prevention and detection behaviors. Cancer Epidemiol. Biomarkers Prev. 2013;22(4):607-14. DOI: http://dx.doi.org/10.1158/1055-9965.EPI-12-1174 .	Discovered that >50% in study already had melanoma
Hall D, Kline M, Glanz K. Analysis of participatory photojournalism in a widely disseminated skin cancer prevention program. Health Promot Pract. 2011;12(5):666-72. DOI: http://dx.doi.org/10.1177/1524839910369069 .	Not SR or RCT
Harrison SL, Devine SG, Saunders VL, Smith AD, Buettner PG, Nowak MJ. Changing the risky beliefs of post-partum women about therapeutic sun-exposure. Women Birth. 2013;26(3):202-6. DOI: http://dx.doi.org/10.1016/j.wombi.2013.03.002 .	At data extraction proved to be a pre-post intervention study
Heckman CJ, Coups EJ. Correlates of sunscreen use among high school students: a cross-sectional survey. BMC Public Health. 2011;11:679. DOI: http://dx.doi.org/10.1186/1471-2458-11-679 .	Not SR or RCT
Houska JA. The influence of perspective and gender on the processing of narratives. Dissertation Abstracts International: Section B: The Sciences and Engineering. 2011;71(11-B):7128	Not RCT or SR
Ipsos Eureka. Evaluation Of National Skin Cancer Awareness Campaign – Final Phase (2008-09). Prepared for Australian Government. . 2009. Available from: http://www.skincancer.gov.au/internet/skincancer/publishing.nsf/Content/42DA1BE1B409955DCA25766D001531A2/\$File/eval09.pdf	Not a SR or RCT
Jung GW, Senthilselvan A, Salopek TG. Ineffectiveness of sun awareness posters in dermatology clinics. J. Eur. Acad. Dermatol. Venereol. 2010;24(6):697-703. DOI: http://dx.doi.org/10.1111/j.1468-3083.2009.03491.x .	RCT but outcomes were not relevant
Jung GW, Senthilselvan A, Salopek TG. Likelihood of dermatology patients to inquire about sun protection measures during a regular clinic visit. J. Cutan. Med. Surg. 2011;15(5):266-74	Not SR or RCT

Bibliographic Information	Exclusion Reason
Langbecker D, Youl P, Kimlin M, Remm K, Janda M. Factors associated with recall of media reports about vitamin D and sun protection. <i>Aust. N. Z. J. Public Health.</i> 2011;35(2):159-62. DOI: http://dx.doi.org/10.1111/j.1753-6405.2011.00686.x .	Not SR or RCT
Lorenc T. Resource provision and environmental change for the prevention of skin cancer : systematic review of qualitative evidence from high-income countries. 2013.	duplicate
Madar AA, Klepp KI, Meyer HE. The effect of tailor-made information on vitamin D status of immigrant mothers in Norway: a cluster randomized controlled trial. <i>Matern Child Nutr.</i> 2011;7(1):92-9. DOI: http://dx.doi.org/10.1111/j.1740-8709.2009.00238.x .	Intervention aiming to manage vitamin D deficiency
Magdum A, Leonforte F, McNaughton E, Kim J, Patel T, Haywood R. Sun protection--do we know enough? <i>Journal of Plastic, Reconstructive & Aesthetic Surgery: JPRAS.</i> 2012;65(10):1384-9. DOI: http://dx.doi.org/10.1016/j.bjps.2011.12.027 .	Survey with no control group
Mahler HIM. The role of emotions in UV protection intentions and behaviors. <i>Psychol. Health Med.</i> 2014;19(3):344-54. DOI: 10.1080/13548506.2013.802359.	Not RCT or SR
Makin J, Bonevski B, Tzelepis F, Girgis A. Developing an effective UV Alert: a qualitative study. In: <i>UV Radiation and its Effects, National Institute of Water & Atmospheric Research Workshop.</i> Queenstown, New Zealand; 2010.	Not an RCT or SR
Oyebanjo E, Bushell F. A critical evaluation of the UK SunSmart campaign and its relevance to Black and minority ethnic communities. <i>Perspect Public Health.</i> 2014. DOI: 10.1177/1757913913516288	SR but no data reported – only vague statements
Pettijohn TF, II, Pettijohn TF, Geschke KS. Changes in sun tanning attitudes and behaviors of U.S. college students from 1995 to 2005. <i>College Student Journal.</i> 2009;43(1):161-65.	Not RCT or SR
Potente S, Rock V, Mclver J, Williams M, Magee C, Chapman K. Fighting skin cancer with a musical sound: The innovative Australian Sun Sound campaign. <i>Social Marketing Quarterly.</i> 2013;19(4):279-89. DOI: http://dx.doi.org/10.1177/1524500413506583 .	Not a SR or RCT
Santiago-Rivas M, Velicer WF, Redding CA, Paiva A. Predicting Outcomes from Cluster Profiles within Stages of Change for Sun Protection Behavior. <i>Ann. Behav. Med.</i> 2011;41:S156-S56.	Not RCT or SR
Schneider S, Kramer H. Who uses sunbeds? A systematic literature review of risk groups in developed countries. <i>J. Eur. Acad. Dermatol. Venereol.</i> 2010;24(6):639-48. DOI: http://dx.doi.org/10.1111/j.1468-3083.2009.03509.x .	SR of non-interventional surveys
Shaikh WR, Geller A, Alexander G, Asgari MM, Chanange GJ, Dusza S, et al. Developing an interactive web-based learning program on skin cancer: the learning experiences of clinical educators. <i>J. Cancer Educ.</i> 2012;27(4):709-16. DOI: http://dx.doi.org/10.1007/s13187-012-0378-4 .	Not SR or RCT
Simmons VN, Vidrine JI, Brandon TH. Smoking cessation counseling as a teachable moment for skin cancer prevention: pilot studies. <i>Am. J. Health Behav.</i> 2008;32(2):137-45.	Non-randomised study
Smith A, Harrison S, Nowak M, Buettner P, Maclennan R. Changes in the pattern of sun exposure and sun protection in young children from tropical Australia. <i>J. Am. Acad. Dermatol.</i> 2013;68(5):774-83. DOI: http://dx.doi.org/10.1016/j.jaad.2012.10.057 .	At data extraction proved not an RCT or SR
Sundeen JE. The impact of vitamin D education on healthcare providers. <i>Dissertation Abstracts International: Section B: The Sciences and Engineering.</i> 2011;72(2-B):802.	Not RCT or SR
Townsend JS, Pinkerton B, McKenna SA, Higgins SM, Tai E, Steele CB, et al. Targeting children through school-based education and policy strategies: comprehensive cancer control activities in melanoma prevention. <i>J. Am. Acad. Dermatol.</i> 2011;65(5 Suppl 1):S104-13. DOI: http://dx.doi.org/10.1016/j.jaad.2011.05.036 .	Not SR or RCT

Bibliographic Information	Exclusion Reason
Walker DK. Skin Protection for (SPF) Kids Program. J. Pediatr. Nurs. 2012;27(3):233-42. DOI: http://dx.doi.org/10.1016/j.pedn.2011.01.031 .	Single group pre and post intervention
Walkosz BJ, Buller DB, Andersen PA, Scott MD, Dignan MB, Cutter GR, et al. Increasing sun protection in winter outdoor recreation a theory-based health communication program. Am. J. Prev. Med. 2008;34(6):502-9. DOI: http://dx.doi.org/10.1016/j.amepre.2008.02.011 .	Study set in skiing areas
Cercato M C et al. Improving sun-safe knowledge, attitude and behavior in parents of primary school children: a pilot study. J Cancer Educ 2013;28(1):151-7	Pilot study – single arm.
Dodd L J, Forshaw. M J Assessing the efficacy of appearance focused interventions to prevent skin cancer: a systematic review of the Literature. Health Psychology Review, 4:2, 93-111,	SR focused on skin cancer prevention
McDaid C. et al. Sun protection resources and environmental changes to prevent skin cancer: a systematic review. York: Centre for Reviews and Dissemination; 2010.	SR focused on skin cancer prevention
Horsham et al. Interventions to decrease skin cancer risk in outdoor workers: update to a 2007 systematic review. BMC Research Notes 2014, 7:10	SR focused on skin cancer prevention

APPENDIX C

PRISMA Checklist



PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported in Section #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	NA; Evidence Review
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	Executive Summary
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	Executive Summary
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	4.1, 5.1, 6.1, 7.1, 8.1
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	NA
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	4.1, 5.1, 6.1, 7.1, 8.1
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	Appendix A
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Appendix A
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	2.4
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	2.6
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	Appendix A



PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported in Section #
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	2.5
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	2.7
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	2.7

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit: www.prisma-statement.org.

APPENDIX D

Quality Assessment Tables

Table D.1: Summary of the methodological quality of included systematic reviews (AMSTAR criteria)

Study name	Was an 'a priori' design provided?	Was there duplicate study selection and data extraction?	Was a comprehensive literature search performed?	Was the status of publication (i.e. grey literature) used as an inclusion	Was a list of studies (included and excluded) provided?	Were the characteristics of the included studies provided?	Was the scientific quality of the included studies assessed and documented?	Was the scientific quality of the included studies used appropriately in formulating	Were the methods used to combine the findings of studies appropriate?	Was the likelihood of publication bias assessed?	Was the conflict of interest included?	Overall rating ¹
Eagle (2009) (16808)	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No	No	Moderate
Italia (2012) (1130)	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	No	No	Moderate
Kutting (2010) (1704)	No	Unclear	No	Unclear	No	No	No	No	No	No	No	Low
Lin (2011) (1608)	Yes	Unclear	Yes	No	Unclear	Unclear	Yes	Yes	Yes	No	No	Moderate
O'Keefe (2012) (963)	Unclear	Unclear	Unclear	Yes	Yes	No	No	No	Unclear	No	No	Low
Reinau (2013) (590)	Unclear	Unclear	Yes	Yes	No	Unclear	Yes	Unclear	No	No	No	Low

¹ High quality: adequate reporting of eight of the possible eleven AMSTAR criteria;
Moderate quality: five to seven AMSTAR criteria were adequately reported;
Low quality: four or fewer AMSTAR criteria were adequately reported.

Study name	Was an 'a priori' design provided?	Was there duplicate study selection and data extraction?	Was a comprehensive literature search performed?	Was the status of publication (i.e. grey literature) used as an inclusion	Was a list of studies (included and excluded) provided?	Were the characteristics of the included studies provided?	Was the scientific quality of the included studies assessed and documented?	Was the scientific quality of the included studies used appropriately in formulating	Were the methods used to combine the findings of studies appropriate?	Was the likelihood of publication bias assessed?	Was the conflict of interest included?	Overall rating ¹
Rodrigues (2013) (229)	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No	High
Williams (2013) (714)	No	No	Unclear	Yes	No	Yes	Unclear	Unclear	Yes	Yes	No	Low

Table D.2: Summary of the methodological quality of included RCTs²

Study name	Section 1: Population (external validity)		
	Is the source population or source area well described?	Is the eligible population or area representative of the source population or area?	Do the selected participants or areas represent the eligible population or area?
Aarestrup (2014) (96)	+	+	Not reported/unclear
Adams (2009) (2347)	+	Not reported/unclear	Not reported/unclear
Aneja (2012) (233)	+	+	+
Armstrong (2009) (7638)	-	Not reported/unclear	Not reported/unclear
Armstrong (2011) (1540)	Not reported/unclear	Not reported/unclear	++
Buller (2008) (2594)	+	+	++
Buller (2011) (1358)	++	+	++
Carli 2008 (2629)	+	+	Not reported/unclear

² NICE quantitative intervention studies quality appraisal checklist (Appendix F). Checklist responses as follows:
 ++ Indicates that for that particular aspect of study design, the study has been designed or conducted in such a way as to minimise the risk of bias.
 + Indicates that either the answer to the checklist question is not clear from the way the study is reported, or that the study may not have addressed all potential sources of bias for that particular aspect of study design.
 - Should be reserved for those aspects of the study design in which significant sources of bias may persist.
 Not reported (NR) should be reserved for those aspects in which the study under review fails to report how they have (or might have) been considered.
 Not applicable (NA) Should be reserved for those study design aspects that are not applicable given the study design under review (for example, allocation concealment would not be applicable for case control studies)

Study name	Section 1: Population (external validity)		
Chait (2011) (11849)	+	+	Not reported/unclear
Cooper (2014) (25)	+	Not reported/unclear	Not reported/unclear
Cox (2009) (2113)	+	Not reported/unclear	Not reported/unclear
Craciun (2012) (1142)	-	Not reported/unclear	Not reported/unclear
Crane (2012) (873)	++	+	-
Dubas (2012) (850)	+	Not reported/unclear	Not reported/unclear
Dykstra (2008) (12004)	+	Not reported/unclear	Not reported/unclear
Eisman (2013) (641)	+	+	+
Emmons (2011) (1626)	++	++	++
Falk (2011) (1332)	++	++	-
Geller (2006) (3084)	+	+	+
Glanz (2010) (1989)	+	+	+
Glanz (2013) (431)	++	++	++
Glasser (2010) (1990)	++	+	++

Study name	Section 1: Population (external validity)		
Gold (2011) (1336)	+	-	-
Good (2011) (1371)	+	Not reported/unclear	Not reported/unclear
Gritz (2013) {#5}	+	+	Not reported/unclear
Heckman (2013) (624)	+	-	-
Hevey (2008) (12631)	-	-	Not reported/unclear
Hiemstra (2012) (1154)	++	Not reported/unclear	Not reported/unclear
Hillhouse (2008) (2461)	+	+	++
Hoffner (2009) (2303)	+	Not reported/unclear	Not reported/unclear
Hunter (2010) (1955)	++	++	+
Hwang (2012) (919)	+	Not reported/unclear	Not reported/unclear
Isaacowitz (2012) (903)	Not reported/unclear	Not reported/unclear	Not reported/unclear
Janssen (2013) (652)	-	Not reported/unclear	Not reported/unclear
Jessop (2009) (2080)	+	Not reported/unclear	Not reported/unclear
Lemal (2010) (1839)	+	+	+

Study name	Section 1: Population (external validity)		
Mahler (2008) (2605)	+	Not reported/unclear	Not reported/unclear
Mahler (2010) (1712)	Not reported/unclear	Not reported/unclear	Not reported/unclear
Mahler (2013) (491)	+	+	+
Manne (2010) (1692)	++	++	++
Midboe (2011) (11854)	+	Not reported/unclear	Not reported/unclear
Moser (2012) (11821)	+	Not reported/unclear	Not reported/unclear
Nan (2011) (13484)	Not reported/unclear	Not reported/unclear	Not reported/unclear
Notebaert (2014) (4)	+	+	+
Orbell (2008) (2469)	++	-	Not reported/unclear
Pagoto (2010) (1760)	+	+	+
Prentice-Dunn (2009) (2377)	Not reported/unclear	Not reported/unclear	Unclear
Rat (2014) (80)	++	++	++
Reid (2011) (11824)	Not reported/unclear	Not reported/unclear	Not reported/unclear
Reid (2013) (577)	+	Not reported/unclear	Not reported/unclear

Study name	Section 1: Population (external validity)		
Reynolds (2008) (2069)	+	+	+
Roberts (2009) (2300)	+	Unclear	+
Roberts (2011) (1283)	+	Not reported/unclear	+
Robinson (2013) (564)	+	++	Not reported/unclear
Roetzheim (2011) (1270)	+	Not reported/unclear	Not reported/unclear
Sambrook (2012) (1185)	+	Not reported/unclear	-
Sancho-Garnier (2012) (951)	+	++	+
Schuz & Eid (2013) (172)	++	Not reported/unclear	Not reported/unclear
Schuz (2013) (576)	Not reported/unclear	Not reported/unclear	Not reported/unclear
Seidel (2013) (183)	+	Not reported/unclear	Not reported/unclear
Siegel (2010) (13565)	Not reported/unclear	-	-
Stock (2009) (2084)	+	Not reported/unclear	Not reported/unclear
Stoner (2009) (11928)	+	+	Not reported/unclear
Thomas (2011) (1520)	+	-	Not reported/unclear

Study name	Section 1: Population (external validity)		
van Osch (2008) (2590)	+	-	-
Walsh (2012) (982)	+	Not reported/unclear	Not reported/unclear
Wollina (2014) (8)	-	-	++

Table D.3: **Section 2**

Study name	Section 2: Method of allocation to intervention (or comparison) (internal validity)									
	Allocation to intervention (or comparison). How was selection bias minimised?	Were interventions (and comparisons) well described and appropriate?	Was the allocation concealed?	Were participants or investigators blind to exposure and comparison?	Was the exposure to the intervention and the comparison adequate?	Was contamination acceptably low?	Were other interventions similar in both groups?	Were all participants accounted for at study conclusion?	Did the setting reflect usual UK practice?	Did the intervention or control comparison reflect usual UK practice?
Aarestrup (2014) (96)	Not reported/unclear	++	Not reported/unclear	Not applicable	Not reported/unclear	++	++	-	-	Not reported/unclear
Adams (2009) (2347)	Not reported/unclear	+	Not reported/unclear	-	++	Not reported/unclear	Not reported/unclear	-	-	Not reported/unclear
Aneja (2012) (233)	+	+	Not reported/unclear	-	Not reported/unclear	Not reported/unclear	Not reported/unclear	Not reported/unclear	+	+
Armstrong (2009) (7638)	++	++	++	Not applicable	Not reported/unclear	Not reported/unclear	Not applicable	++	-	-
Armstrong (2011) (1540)	Not reported/unclear	++	Not reported/unclear	Not reported/unclear	++	Not reported/unclear	Not reported/unclear	++	++	++
Buller (2008) (2594)	+	++	Not reported/unclear	Not reported/unclear	++	Not applicable	Not applicable	+	++	++
Buller (2011)	+	++	Not reported/unclear	+	++	++	++	++	Not applicable	Not applicable

Study name	Section 2: Method of allocation to intervention (or comparison) (internal validity)									
	Allocation to intervention (or comparison). How was selection bias minimised?	Were interventions (and comparisons) well described and appropriate?	Was the allocation concealed?	Were participants or investigators blind to exposure and comparison?	Was the exposure to the intervention and comparison adequate?	Was contamination acceptably low?	Were other interventions similar in both groups?	Were all participants accounted for at study conclusion?	Did the setting reflect usual UK practice?	Did the intervention or control comparison reflect usual UK practice?
(1358)			ear							
Carli 2008 (2629)	++	++	++	Not reported/un clear	++	Not applicable	Not applicable	++	++	++
Chait (2011) (11849)	+	++	Not reported/uncl ear	Not reported/un clear	++	Not applicable	Not applicable	+	++	++
Cooper (2014) (25)	Not reported/un clear	+	+	Not applicable	Not reported/un clear	Not reported/uncl ear	Not applicable	Not applicable	-	-
Cox (2009) (2113)	Not reported/un clear	++	Not reported/uncl ear	Not applicable	Not reported/un clear	Not reported/uncl ear	Not applicable	+	-	-
Craciun (2012) (1142)	++	++	++	Not applicable	Not reported/un clear	++	Not applicable	++	-	-
Crane (2012) (873)	++	++	++	+	Not reported/un clear	Not reported/uncl ear	Not reported/uncl ear	++	-	-
Dubas (2012) (850)	++	++	++	-	Not reported/un clear	Not reported/uncl ear	Not applicable	++	-	-
Dykstra (2008) (12004)	Not reported/un clear	++	Not reported/uncl ear	Not applicable	Not reported/un clear	Not reported/uncl ear	Not applicable	++	-	-

Study name	Section 2: Method of allocation to intervention (or comparison) (internal validity)									
	Allocation to intervention (or comparison). How was selection bias minimised?	Were interventions (and comparisons) well described and appropriate?	Was the allocation concealed?	Were participants or investigators blind to exposure and comparison?	Was the exposure to the intervention and comparison adequate?	Was contamination acceptably low?	Were other interventions similar in both groups?	Were all participants accounted for at study conclusion?	Did the setting reflect usual UK practice?	Did the intervention or control comparison reflect usual UK practice?
Eisman (2013) (641)	Not reported/unclear	++	Not reported/unclear	Not applicable	Not reported/unclear	+	++	-	-	+
Emmons (2011) (1626)	+	++	Not reported/unclear	++	++	++	++	++	-	++
Falk (2011) (1332)	Not reported/unclear	++	Not reported/unclear	Not applicable	++	Not reported/unclear	Not reported/unclear	+	++	-
Geller (2006) (3084)	-	++	Not reported/unclear	Not reported/unclear	+	Not applicable	+	++	++	+
Glanz (2010) (1989)	+	++	Not reported/unclear	Not reported/unclear	++	++	+	++	+	+
Glanz (2013) (431)	++	++	++	++	++	++	+	++	++	++
Glasser (2010) (1990)	+	++	Not reported/unclear	-	Not reported/unclear	Not applicable	Not applicable	-	++	++
Gold (2011) (1336)	+	+	-	-	Not reported/unclear	+	Not applicable	-	-	-
Good (2011)	++	++	Not reported/unclear	Not applicable	Not reported/unclear	Not reported/unclear	Not applicable	++	-	-

Study name	Section 2: Method of allocation to intervention (or comparison) (internal validity)									
	Allocation to intervention (or comparison). How was selection bias minimised?	Were interventions (and comparisons) well described and appropriate?	Was the allocation concealed?	Were participants or investigators blind to exposure and comparison?	Was the exposure to the intervention and comparison adequate?	Was contamination acceptably low?	Were other interventions similar in both groups?	Were all participants accounted for at study conclusion?	Did the setting reflect usual UK practice?	Did the intervention or control comparison reflect usual UK practice?
(1371)			ear		clear	ear				
Gritz (2013) (5)	Not reported/unclear	+	Not reported/unclear	Not reported/unclear	+	++	++	+	-	-
Heckman (2013) (624)	+	++	++	Not applicable	Not reported/unclear	Not reported/unclear	Not reported/unclear	+	-	-
Hevey (2008) (12631)	+	++	Not reported/unclear	Not reported/unclear	+	Not applicable	Not applicable	Not reported/unclear	Not reported/unclear	++
Hiemstra (2012) (1154)	Not reported/unclear	++	Not reported/unclear	+	++	++	++	Not reported/unclear	++	++
Hillhouse (2008) (2461)	+	-	Not reported/unclear	Not reported/unclear	++	Not applicable	++	++	++	++
Hoffner (2009) (2303)	+	++	Not reported/unclear	Not applicable	Not reported/unclear	Not reported/unclear	Not applicable	+	-	-
Hunter (2010) (1955)	++	++	Not reported/unclear	Not reported/unclear	++	++	++	++	++	++
Hwang (2012) (919)	++	++	Not reported/unclear	+	++	Not reported/unclear	Not reported/unclear	Not reported/unclear	++	+

Study name	Section 2: Method of allocation to intervention (or comparison) (internal validity)									
	Allocation to intervention (or comparison). How was selection bias minimised?	Were interventions (and comparisons) well described and appropriate?	Was the allocation concealed?	Were participants or investigators blind to exposure and comparison?	Was the exposure to the intervention and comparison adequate?	Was contamination acceptably low?	Were other interventions similar in both groups?	Were all participants accounted for at study conclusion?	Did the setting reflect usual UK practice?	Did the intervention or control comparison reflect usual UK practice?
Isaacowitz (2012) (903)	+	++	Not reported/unclear	Not reported/unclear	+	Not applicable	Not applicable	Not reported/unclear	+	+
Janssen (2013) (652)		++	Not reported/unclear	-	Not reported/unclear	++	Not applicable	-	-	-
Jessop (2009) (2080)	-	+	Not reported/unclear	Not applicable	Not reported/unclear	Not reported/unclear	Not applicable	+	-	+
Lemal (2010) (1839)	++	++	++	++	++	Not applicable	Not applicable	-	++	++
Mahler (2008) (2605)	+	++	Not reported/unclear	+	Not reported/unclear	Not reported/unclear	Not applicable	++	-	-
Mahler (2010) (1712)	++	++	++	+	++	Not applicable	Not applicable	++	++	++
Mahler (2013) (491)	-	++	+	-	++	+	++	+	Not applicable	Not applicable
Manne (2010) (1692)	+	++	Not reported/unclear	Not reported/unclear	++	Not applicable	Not applicable	++	++	++

Study name	Section 2: Method of allocation to intervention (or comparison) (internal validity)									
	Allocation to intervention (or comparison). How was selection bias minimised?	Were interventions (and comparisons) well described and appropriate?	Was the allocation concealed?	Were participants or investigators blind to exposure and comparison?	Was the exposure to the intervention and comparison adequate?	Was contamination acceptably low?	Were other interventions similar in both groups?	Were all participants accounted for at study conclusion?	Did the setting reflect usual UK practice?	Did the intervention or control comparison reflect usual UK practice?
Midboe (2011) (11854)	+	++	Not reported/unclear	Not applicable	Appears adequate +	Not reported/unclear	Not applicable	+	-	-
Moser (2012) (11821)	Not reported/unclear	++	Not reported/unclear	Not applicable	Not reported/unclear	Not reported/unclear	Not applicable	-	-	-
Nan (2011) (13484)	+	+	Not reported/unclear	Not reported/unclear	++	Not applicable	Not applicable	Not reported/unclear	++	++
Notebaert (2014) (4)	Not reported/unclear	++	Not reported/unclear	+	++	++	++	Not reported/unclear	Not applicable	Not applicable
Orbell (2008) (2469)	+	+	Not reported/unclear	Not reported/unclear	++	Not applicable	Not applicable	++	++	Not reported/Unclear
Pagoto (2010) (1760)	-	++	Not reported/unclear (+	++	++	++	+	Not applicable	Not applicable
Prentice-Dunn (2009) (2377)	+	+	Not reported/unclear	Not reported/unclear	Not reported/unclear	Not applicable	Not applicable	++	+	++
Rat (2014) (80)	++	++	-	Not reported/unclear	Not reported/unclear	++	Not applicable	++	+	+

Study name	Section 2: Method of allocation to intervention (or comparison) (internal validity)									
	Allocation to intervention (or comparison). How was selection bias minimised?	Were interventions (and comparisons) well described and appropriate?	Was the allocation concealed?	Were participants or investigators blind to exposure and comparison?	Was the exposure to the intervention and comparison adequate?	Was contamination acceptably low?	Were other interventions similar in both groups?	Were all participants accounted for at study conclusion?	Did the setting reflect usual UK practice?	Did the intervention or control comparison reflect usual UK practice?
Reid (2011) (11824)	++	++	Not reported/unclear	Not reported/unclear	+	Not reported/unclear	+	-	Not reported/unclear	Not reported/unclear
Reid (2013) (577)	++	++	Not reported/unclear	Not reported/unclear	Not reported/unclear	Not reported/unclear	Not reported/unclear	+	+	+
Reynolds (2008) (2069)	+	++	Not reported/unclear	Not reported/unclear	++	Not applicable	Not applicable	-	++	++
Roberts (2009) (2300)	+	++	Not reported/unclear	Not reported/unclear	++	Not applicable	Not applicable	++	++	++
Roberts (2011) (1283)	Not reported/unclear	++	Not reported/unclear	Not applicable	+	N/A	Not applicable	+	-	-
Robinson (2013) (564)	+	++	Not reported/unclear	Not reported/unclear	+	Not reported/unclear	Not reported/unclear	-	+	+
Roetzheim (2011) (1270)	Not reported/unclear	+	Not reported/unclear	Not applicable	Not reported/unclear	+	Not applicable	+	-	-
Sambrook (2012) (1185)	+	++	++	Not applicable	Not reported/unclear	++	Not reported/unclear	+	+	-

Study name	Section 2: Method of allocation to intervention (or comparison) (internal validity)									
	Allocation to intervention (or comparison). How was selection bias minimised?	Were interventions (and comparisons) well described and appropriate?	Was the allocation concealed?	Were participants or investigators blind to exposure and comparison?	Was the exposure to the intervention and comparison adequate?	Was contamination acceptably low?	Were other interventions similar in both groups?	Were all participants accounted for at study conclusion?	Did the setting reflect usual UK practice?	Did the intervention or control comparison reflect usual UK practice?
Sancho-Garnier (2012) (951)	+	+	Not reported/unclear	+	++	+	+	+	++	++
Schuz & Eid (2013) (172)	++	++	Not reported/unclear	Not applicable	Not reported/unclear	Not reported/unclear	++	++	Not reported/unclear	-
Schuz (2013) (576)	++	++	++	+	++	Not reported/unclear	Not reported/unclear	-	+	+
Seidel (2013) (183)	Not reported/unclear	+	Not reported/unclear	-	Not reported/unclear	+	Not reported/unclear	-	-	-
Siegel (2010) (13565)	+	-	Not reported/unclear	Not reported/unclear	Not reported/unclear	Not applicable	Not applicable	Not reported/unclear	++	Not reported/unclear
Stock (2009) (2084)	++	++	Not reported/unclear	Not applicable	+	Not reported/unclear	Not applicable	+	-	-
Stoner (2009) (11928)	++	++	++	Not applicable	Not reported/unclear	Not reported/unclear	Not applicable	++	-	-
Thomas (2011) (1520)	Not reported/unclear	++	Not reported/unclear	Not applicable	+	Not reported/unclear	Not applicable	++	-	-

Study name	Section 2: Method of allocation to intervention (or comparison) (internal validity)									
	Allocation to intervention (or comparison). How was selection bias minimised?	Were interventions (and comparisons) well described and appropriate?	Was the allocation concealed?	Were participants or investigators blind to exposure and comparison?	Was the exposure to the intervention and comparison adequate?	Was contamination acceptably low?	Were other interventions similar in both groups?	Were all participants accounted for at study conclusion?	Did the setting reflect usual UK practice?	Did the intervention or control comparison reflect usual UK practice?
van Osch (2008) (2590)	+	++	++	Not reported/unclear	++	Not applicable	Not applicable	-	++	++
Walsh (2012) (982)	Not reported/unclear	++	Not reported/unclear	Not applicable	Not reported/unclear	+	Not applicable	+	-	-
Wollina (2014) (8)	++	+	Not reported	NA	++	++	NR	++	++	-

Table D.4: Section 3

Study name	Section 3: Outcomes (internal validity)					
	Were outcome measures reliable?	Were all outcome measurements complete?	Were all important outcomes assessed?	Were outcomes relevant?	Were there similar follow-up times in exposure and comparison groups?	Was follow-up time meaningful?
Aarestrup (2014) (96)	-	-	+	+	++	+
Adams (2009) (2347)	+	-	+	++	++	+
Aneja (2012) (233)	-	Not reported/unclear	Not reported/unclear	+	++	+
Armstrong (2009) (7638)	++	++	+	++	++	+
Armstrong (2011) (1540)	++	++	Not applicable	++	++	++
Buller (2008) (2594)	-	-	Not applicable	Not reported/unclear	Not reported/unclear	+
Buller (2011) (1358)	++	++	Not applicable	Not applicable	++	+
Carli 2008 (2629)	+	++	Not applicable	+	++	++
Chait (2011) (11849)	+	+	Not applicable	+	++	++
Cooper (2014) (25)	+	+	-	+	+	-

Study name	Section 3: Outcomes (internal validity)					
	Were outcome measures reliable?	Were all outcome measurements complete?	Were all important outcomes assessed?	Were outcomes relevant?	Were there similar follow-up times in exposure and comparison groups?	Was follow-up time meaningful?
Cox (2009) (2113)	+	+	+	+	Not applicable	-
Craciun (2012) (1142)	+	+	+	++	++	+
Crane (2012) (873)	+	+	++	++	++	++
Dubas (2012) (850)	+	+	+	++	++	+
Dykstra (2008) (12004)	+	+	+	++	Not applicable	Not applicable
Eisman (2013) (641)	+	-	+	+	++	+
Emmons (2011) (1626)	++	+	++	++	++	+
Falk (2011) (1332)	+	+	++	++	++	++
Geller (2006) (3084)	+	++	Not applicable	+	++	++
Glasser (2010) (1990)	+	-	Not applicable	++	++	++
Glanz (2010) (1989)	+	++	+	++	++	Not reported/unclear
Glanz (2013) (431)	+	+	+	++	++	++

Study name	Section 3: Outcomes (internal validity)					
	Were outcome measures reliable?	Were all outcome measurements complete?	Were all important outcomes assessed?	Were outcomes relevant?	Were there similar follow-up times in exposure and comparison groups?	Was follow-up time meaningful?
Gold (2011) (1336)	+	-	+	++	++	+
Good (2011) (1371)	+	++	+	++	Not applicable	Not applicable
Gritz (2013) (5)	+	+	+	+	+	+
Heckman (2013) (624)	-	Not reported/unclear	-	+	++	++
Hevey (2008) (12631)	+	Not reported/unclear	Not applicable	+	+	-
Hiemstra (2012) (1154)	++	++	+	+	++	+
Hillhouse (2008) (2461)	++	++	Not applicable	++	++	++
Hoffner (2009) (2303)	+	+	+	++	Not applicable	Not applicable
Hunter (2010) (1955)	++	++	+	++	++	++
Hwang (2012) (919)	+	Not reported/unclear	Not applicable	+	Not applicable	Not applicable
Isaacowitz (2012) (903)	+	Not reported/unclear	Not applicable	+	Not applicable	+
Janssen (2013) (652)	+	-	-	+	+	+

Study name	Section 3: Outcomes (internal validity)					
	Were outcome measures reliable?	Were all outcome measurements complete?	Were all important outcomes assessed?	Were outcomes relevant?	Were there similar follow-up times in exposure and comparison groups?	Was follow-up time meaningful?
Jessop (2009) (2080)	+	+	Not applicable	+	Not applicable	Not applicable
Lemal (2010) (1839)	+	-	Not applicable	+	++	++
Mahler (2008) (2605)	+	+	+	++	++	+
Mahler (2010) (1712)	+	++	Not applicable	+	++	++
Mahler (2013) (491)	+	+	++	++	++	++
Manne (2010) (1692)	+	++	Na	+	++	++
Midboe (2011) (11854)	+	+	+	+	+	+
Moser (2012) (11821)	+	-	+	++	++	-
Nan (2011) (13484)	+	Not reported/unclear	Not applicable	-	-	-
Notebaert (2014) (4)	-	+	+	-	++	+
Orbell (2008) (2469)	+	++	+	++	+	++
Pagoto 2010 (1760)	+	+	++	++	++	++

Study name	Section 3: Outcomes (internal validity)					
	Were outcome measures reliable?	Were all outcome measurements complete?	Were all important outcomes assessed?	Were outcomes relevant?	Were there similar follow-up times in exposure and comparison groups?	Was follow-up time meaningful?
Prentice-Dunn (2009) (2377)	+	++	Not applicable	+	++	++
Rat (2014) (80)	-	+	+	+	++	++
Reid (2011) (11824)	+	-	Not applicable	+	+	+
Reid (2013) (577)	+	+	+	+	Not reported/unclear	+
Reynolds (2008) (2069)	+	-	Not applicable	++	++	++
Roberts (2009) (2300)	+	++	Not applicable	++	++	++
Roberts (2011) (1283)	+	+	-	+	+	Not applicable
Robinson (2013) (564)	+	-	+	++	++	-
Roetzheim (2011) (1270)	++	++	+	++	++	++
Sambrook (2012) (1185)	++	++	++	++	++	++
Sancho-Garnier (2012) (951)	+	+	++	+	++	++
Schuz & Eid (2013) (172)	+	+	Not reported/unclear	+	++	+

Study name	Section 3: Outcomes (internal validity)					
	Were outcome measures reliable?	Were all outcome measurements complete?	Were all important outcomes assessed?	Were outcomes relevant?	Were there similar follow-up times in exposure and comparison groups?	Was follow-up time meaningful?
Schuz (2013) (576)	+	+	+	+	+	-
Seidel (2013) (183)	Not reported/unclear	+	-	+	++	+
Siegel (2010) (13565)	Not reported/unclear	Not reported/unclear	Not applicable	-	Not reported/unclear	Not reported/unclear
Stock (2009) (2084)	+	+	+	++	++	++
Stoner (2009) (11928)	+	+	+	+	Not applicable	Not applicable
Thomas (2011) (1520)	+	++	+	+	++	Not applicable
van Osch (2008) (2590)	+	-	Not applicable	+	++	++
Walsh (2012) (982)	+	+	+	+	+	Not applicable
Wollina (2014) (8)	++	++	+	++	++	++

Table D.5: **Section 4**

Study Name	Section 4: Analyses (internal validity)					
	Were exposure and comparison groups similar at baseline?	Was intention to treat (ITT) analysis conducted?	Was the study sufficiently powered to detect an intervention effect (if one exists)?	Were the estimates of effect size given or calculable?	Were the analytical methods appropriate?	Was the precision of intervention effect given or calculable: Were they meaningful?
Aarestrup (2014) (96)	+	++	++	++	++	++
Adams (2009) (2347)	Not reported/unclear	Not reported/unclear	Not reported/unclear	+	++	++
Aneja (2012) (233)	+	Not reported/unclear	Not reported/unclear	++	+	++
Armstrong (2009) (7638)	++	++	++	++	++	++
Armstrong (2011) (1540)	++	+	Not reported/unclear	++	++	++
Buller (2008) (2594)	++	-	Not reported/unclear	+	++	Not applicable
Buller (2011) (1358)	Not reported/unclear	++	-	Not reported/unclear	++	++
Carli 2008 (2629)	++	++	Not reported/unclear	+	+	+
Chait (2011) (11849)	++	-	++	++	++	++
Cooper (2014) (25)	Not reported/unclear	Not reported/unclear	++	-	+	++

Study Name	Section 4: Analyses (internal validity)					
	Were exposure and comparison groups similar at baseline?	Was intention to treat (ITT) analysis conducted?	Was the study sufficiently powered to detect an intervention effect (if one exists)?	Were the estimates of effect size given or calculable?	Were the analytical methods appropriate?	Was the precision of intervention effect given or calculable: Were they meaningful?
Cox (2009) (2113)	Not reported/unclear	Not reported/unclear	Not reported/unclear	+	+	++
Craciun (2012) (1142)	Not reported/unclear	+	Not reported/unclear	++	++	++
Crane (2012) (873)	++	++	++	++	++	++
Dubas (2012) (850)	++	Not reported/unclear	Not reported/unclear	+	+	++
Dykstra (2008) (12004)	+	Not reported/unclear	Not reported/unclear	+	++	++
Eisman (2013) (641)	+	-	Not reported/unclear	++	+	++
Emmons (2011) (1626)	++	+	Not reported/unclear	++	+	++
Falk (2011) (1332)	Not reported/unclear	-	Not reported/unclear	++	++	-
Geller (2006) (3084)	++	++	Not reported/unclear	++	++	++
Glanz (2010) (1989)	++	+	Not reported/unclear	++	++	+
Glanz (2013) (431)	++	++	++	++	++	+

Study Name	Section 4: Analyses (internal validity)					
	Were exposure and comparison groups similar at baseline?	Was intention to treat (ITT) analysis conducted?	Was the study sufficiently powered to detect an intervention effect (if one exists)?	Were the estimates of effect size given or calculable?	Were the analytical methods appropriate?	Was the precision of intervention effect given or calculable: Were they meaningful?
Glasser (2010) (1990)	++	-	Not reported/unclear	++	++	++
Gold (2011) (1336)	+	-	-	++	++	++
Good (2011) (1371)	++	Not reported/unclear	Not reported/unclear	++	++	++
Gritz (2013) (5)	+	Not reported/unclear	Not reported/unclear	Not reported/unclear	+	+
Heckman (2013) (624)	+	Not reported/unclear	+	+	+	++
Hevey (2008) (12631)	Not reported/unclear	Not reported/unclear	Not reported/unclear	Not reported/unclear	Not reported/unclear	-
Hiemstra (2012) (1154)	+	Not reported/unclear	Not reported/unclear	+	+	++
Hillhouse (2008) (2461)	++	++	Not reported/unclear	++	++	
Hoffner (2009) (2303)	++	Not reported/unclear	Not reported/unclear	+	++	++
Hunter (2010) (1955)	++	+	++	++	++	++
Hwang (2012) (919)	Not reported/unclear	Not reported/unclear	Not reported/unclear	++	++	++

Study Name	Section 4: Analyses (internal validity)					
	Were exposure and comparison groups similar at baseline?	Was intention to treat (ITT) analysis conducted?	Was the study sufficiently powered to detect an intervention effect (if one exists)?	Were the estimates of effect size given or calculable?	Were the analytical methods appropriate?	Was the precision of intervention effect given or calculable: Were they meaningful?
Isaacowitz (2012) (903)	Not reported/unclear	Not reported/unclear	Not reported/unclear	+	Not reported/unclear	Not applicable
Janssen (2013) (652)	-	+	Not reported/unclear	+	+	++
Jessop (2009) (2080)	Not reported/unclear	Not reported/unclear	Not reported/unclear	+	+	++
Lemal (2010) (1839)	+	-	Not reported/unclear	++	++	++
Mahler (2008) (2605)	++	Not reported/unclear	++	++	++	++
Mahler (2010) (1712)	Not reported/unclear	++	++	++	++	++
Mahler (2013) (491)	+	+	++	++	+	+
Manne (2010) (1692)	++	++	Not reported/unclear	++	++	++
Midboe (2011) (11854)	++ full analysis was undertaken	Not reported/unclear	+	++	++	++
Moser (2012) (11821)	+	Not reported/unclear	Not reported/unclear	+	++	++
Nan (2011) (13484)	Not reported/unclear	Not reported/unclear	Not reported/unclear	++	++	++

Study Name	Section 4: Analyses (internal validity)					
	Were exposure and comparison groups similar at baseline?	Was intention to treat (ITT) analysis conducted?	Was the study sufficiently powered to detect an intervention effect (if one exists)?	Were the estimates of effect size given or calculable?	Were the analytical methods appropriate?	Was the precision of intervention effect given or calculable: Were they meaningful?
Notebaert (2014) (4)	+	++	+	-	+	+
Orbell (2008) (2469)	++	++	Not reported/unclear	Not reported/unclear	++	++
Pagoto (2010) (1760)	++	++	++	+	++	++
Prentice-Dunn (2009) (2377)	Not reported/unclear	+	Not reported/unclear	-	++	-
Rat (2014) (80)	+	++	+	+	++	++
Reid (2011) (11824)	+	Not reported/unclear	Not reported/unclear	++	++	++
Reid (2013) (577)	Not reported/unclear	-	Not reported/unclear	+	+	Not applicable
Reynolds (2008) (2069)	++	-	Not reported/unclear	++	++	++
Roberts (2009) (2300)	Not reported/unclear	++	Not reported/unclear	++	++	++
Roberts (2011) (1283)	Not reported/unclear	Not reported/unclear	-	+	+	++
Robinson (2013) (564)	Not reported/unclear	-	-	+	+	Not applicable

Study Name	Section 4: Analyses (internal validity)					
	Were exposure and comparison groups similar at baseline?	Was intention to treat (ITT) analysis conducted?	Was the study sufficiently powered to detect an intervention effect (if one exists)?	Were the estimates of effect size given or calculable?	Were the analytical methods appropriate?	Was the precision of intervention effect given or calculable: Were they meaningful?
Roetzheim (2011) (1270)	++	Not reported/unclear	Not reported/unclear	+	++	++
Sambrook (2012) (1185)	+	++	++	++	++	++
Sancho-Garnier (2012) (951)	++	++	++	++	++	++
Schuz & Eid (2013) (172)	++	Not reported/unclear	+	Not reported/unclear	-	Not reported/unclear
Schuz (2013) (576)	Not reported/unclear	-	+	+	+	Not applicable
Seidel (2013) (183)	++	Not reported/unclear	Not reported/unclear	+	+	++
Siegel (2010) (13565)	Not reported/unclear	Not reported/unclear	Not reported/unclear	++	+	++
Stock (2009) (2084)	+	Not reported/unclear	++	+	+	++
Stoner (2009) (11928)	+	Not reported/unclear	+	+	++	++
Thomas (2011) (1520)	Not reported/unclear	Not reported/unclear	Not reported/unclear	+	++	++
van Osch (2008) (2590)	+	-	Not reported/unclear	++	++	++

Study Name	Section 4: Analyses (internal validity)					
	Were exposure and comparison groups similar at baseline?	Was intention to treat (ITT) analysis conducted?	Was the study sufficiently powered to detect an intervention effect (if one exists)?	Were the estimates of effect size given or calculable?	Were the analytical methods appropriate?	Was the precision of intervention effect given or calculable: Were they meaningful?
Walsh (2012) (982)	++	-	Not reported/unclear	+	+	++
Wollina 2014 (8)	NR	Not reported/unclear	NR	++	++	++

Table D.6: **Sections 5 and Overall**

Study Name	Section 5: Summary		
	Are the study results internally valid (i.e. unbiased)?	Are the findings generalisable to the source population (i.e. externally valid)?	Overall quality assessment
Aarestrup (2014) (96)	+	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Adams (2009) (2347)	Not reported/unclear	Not reported/unclear	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Aneja (2012) (233)	+	+	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Armstrong (2009) (7638)	++	-	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Armstrong (2011) (1540)	++	Not reported/unclear	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Buller (2008) (2594)	-	+	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Buller (2011) (1358)	+	+	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Carli (2008) (2629)	++	+	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Chait (2011) (11849)	++	Not reported/unclear	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Cooper (2014) (25)	-	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Cox (2009) (2113)	+	Not reported/unclear	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)

Study Name	Section 5: Summary		
	Are the study results internally valid (i.e. unbiased)?	Are the findings generalisable to the source population (i.e. externally valid)?	Overall quality assessment
Craciun (2012) (1142)	+	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Crane (2012) (873)	++	-	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Dubas (2012) (850)	-	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Dykstra (2008) (12004)	Not reported/unclear	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Eisman (2013) (641)	-	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Emmons (2011) (1626)	++	+	++ (All or most of the checklist criteria have been fulfilled and the conclusions are unlikely to alter where the criteria hasn't been fulfilled)
Falk (2011) (1332)	Unclear	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Geller (2006) (3084)	++	Unclear	++ (All or most of the checklist criteria have been fulfilled and the conclusions are unlikely to alter where the criteria hasn't been fulfilled)
Glanz (2010) (1989)	++	+	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Glanz (2013) (431)	++	+	++ (All or most of the checklist criteria have been fulfilled and the conclusions are unlikely to alter where the criteria hasn't been fulfilled)
Glasser (2010) (1990)	+	++	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)

Study Name	Section 5: Summary		
	Are the study results internally valid (i.e. unbiased)?	Are the findings generalisable to the source population (i.e. externally valid)?	Overall quality assessment
Gold (2011) (1336)	-	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Good (2011) (1371)	+	-	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Gritz (2013) (5)	-	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Heckman (2013) (624)	+	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Hevey (2008) (12631)	-	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Hiemstra (2012) (1154)	+	-	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Hillhouse (2008) (2461)	++	++	++ (All or most of the checklist criteria have been fulfilled and the conclusions are unlikely to alter where the criteria hasn't been fulfilled)
Hoffner (2009) (2303)	-	Unclear	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Hunter (2010) (1955)	++	++	++ (All or most of the checklist criteria have been fulfilled and the conclusions are unlikely to alter where the criteria hasn't been fulfilled)
Hwang (2012) (919)	+	+	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Isaacowitz (2012) (903)	-	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Janssen (2013) (652)	-	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)

Study Name	Section 5: Summary		
	Are the study results internally valid (i.e. unbiased)?	Are the findings generalisable to the source population (i.e. externally valid)?	Overall quality assessment
Jessop (2009) (2080)	-	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Lemal (2010) (1839)	+	-	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Mahler (2008) (2605)	Unclear	Unclear	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Mahler (2010) (1712)	+	-	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Mahler (2013) (491)	+	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Manne (2010) (1692)	++	++	++ (All or most of the checklist criteria have been fulfilled and the conclusions are unlikely to alter where the criteria hasn't been fulfilled)
Midboe (2011) (11854)	+	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Moser (2012) (11821)	-	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Nan (2011) (13484)	-	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Notebaert (2014) (4)	-	+	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Orbell (2008) (2469)	Unclear	-	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Pagoto 2010 (1760)	++	+	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)

Study Name	Section 5: Summary		
	Are the study results internally valid (i.e. unbiased)?	Are the findings generalisable to the source population (i.e. externally valid)?	Overall quality assessment
Prentice-Dunn (2009) (2377)	+	Unclear	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Rat (2014) (80)	+	+	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Reid (2011) (11824)	-	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Reid (2013) (577)	+	-	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Reynolds (2008) (2069)	-	+	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Roberts (2009) (2300)	+	+	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Roberts (2011) (1283)	-	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Robinson (2013) (564)	-	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Roetzheim (2011) (1270)	+	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Sambrook (2012) (1185)	+	-	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Sancho-Garnier (2012) (951)	++	++	++ (All or most of the checklist criteria have been fulfilled and the conclusions are unlikely to alter where the criteria hasn't been fulfilled)

Study Name	Section 5: Summary		
	Are the study results internally valid (i.e. unbiased)?	Are the findings generalisable to the source population (i.e. externally valid)?	Overall quality assessment
Schuz & Eid (2013) (172)	+	Unclear	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Schuz (2013) (576)	+	-	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Seidel (2013) (183)	-	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Siegel (2010) (13565)	-	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Stock (2009) (2084)	+	-	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
Stoner (2009) (11928)	Unclear	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Thomas (2011) (1520)	+	-	+ (Some of the criteria has been fulfilled and the conclusions are unlikely to alter for the criteria that has not been fulfilled or not adequately described)
van Osch (2008) (2590)	-	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Walsh (2012) (982)	+	-	- (Few or no criteria have been fulfilled and the conclusions are likely to alter)
Wollina (2014) (8)	NR	-	++ (All or most of the checklist criteria have been fulfilled and the conclusions are unlikely to alter where the criteria hasn't been fulfilled)

Table D.7: Summary of the methodological quality of included comparative observational studies³

RefID	1.1 Is the source population or source area well described?	1.2 Is the eligible population or area representative of the source population?	1.3 Do the selected participants or areas represent the eligible population?	2.1 Selection of exposure (and comparison) group. How was selection bias minimised?	2.2 Was the selection of explanatory variables based on a sound theoretical basis?	2.3 Was the contamination acceptably low?	2.4 How well were likely confounding factors identified and controlled?	2.5 Is the setting applicable to the UK?	3.1 Were the outcome measures and procedures reliable?	3.2 Were the outcome measurements complete?	3.3 Were all the important outcomes assessed?	3.4 Was there a similar follow-up time in exposure and comparison groups?	3.5 Was follow-up time meaningful?	4.1 Was the study sufficiently powered to detect an intervention effect (if one exists)?	4.2 Were multiple explanatory variables considered in the analyses?	4.3 Were the analytical methods appropriate?	4.4 Was the precision of association given or calculable? Is association meaningful?	5.1 Are the study results internally valid (i.e. unbiased)?	5.2 Are the findings generalisable to the source population (i.e. externally valid)?	As far as can be ascertained from the paper, how well was the study conducted?
28	Y	Y	Y	Y	Y	Y	U	Y	Y	Y	N	N/A	N/A	N	N	Y	Y	Y	Y	+
98	Y	Y	Y	Y	Y	Y	Y	Y	U	Y	Y	N/A	N/A	Y	Y	Y	Y	Y	Y	+
484	Y	Y	Y	U	U	Y	U	Y	U	Y	Y	N/A	N/A	U	N	Y	Y	Y	Y	+
492	Y	U	U	U	U	U	Y	Y	Y	Y	U	N/A	N/A	Y	Y	Y	Y	Y	U	+
1768	Y	U	U	U	Y	Y	Y	Y	U	N	Y	Y	N	N	Y	Y	Y	N	N	-
1838	Y	Y	Y	N/A	Y	Y	Y	Y	U	Y	N	N/A	N/A	U	N	Y	Y	Y	Y	+
2337	Y	U	U	U	N/A	Y	U	Y	U	Y	Y	Y	Y	U	N	Y	Y	Y	N	+
2731	Y	U	U	U	U	Y	U	Y	Y	N	Y	N/A	N/A	N	N	Y	Y	Y	N	-
6350	Y	U	U	N/A	N/A	Y	U	Y	U	Y	N	N/A	N/A	U	N	Y	Y	Y	N	-
11691	Y	Y	Y	N	N/A	U	U	Y	U	N	Y	N/A	N/A	U	N	Y	Y	Y	N	+

³ NICE quantitative intervention studies reporting correlations and associations quality appraisal checklist (Appendix G). Checklist responses as follows:

++ Indicates that for that particular aspect of study design, the study has been designed or conducted in such a way as to minimise the risk of bias.

+ Indicates that either the answer to the checklist question is not clear from the way the study is reported, or that the study may not have addressed all potential sources of bias for that particular aspect of study design.

- Should be reserved for those aspects of the study design in which significant sources of bias may persist.

Not reported (NR) should be reserved for those aspects in which the study under review fails to report how they have (or might have) been considered.

Not applicable (NA) Should be reserved for those study design aspects that are not applicable given the study design under review (for example, allocation concealment would not be applicable for case control studies)

Table D.8: Summary of the methodological quality of included non-comparative observational studies; population, methods and bias⁴

	<i>Relevance of the study to the project</i>			<i>Choice of study methods</i>	<i>Is the population studied appropriate?</i>			<i>Is confounding and bias considered?</i>			
	1.1 Does the paper address a clearly focussed issue in terms of population studied?	1.2 Does the paper address a clearly focussed issue in terms of outcomes considered?	1.3 Are the aims of the study clearly stated?	2.1 Is the choice of study method appropriate (is justification for the study method stated)?	3.1 Were sampling techniques described?	3.2 Was the sample representative of its target population?	3.3 Was the sample size justified?	4.1 Have all possible explanations of the effects been considered?	4.2 Did the study achieve a good response rate?	4.3 Were rigorous processes used to develop the questions? (e.g. were the questions	4.4 Does the study measure what it intended to?
727	Y	Y	Y	Y	Y	Y	N	N	N	N	Y
739	Y	Y	Y	Y	Y	U	N	Y	N	U	Y
932	Y	Y	Y	Y	N	U	N	N	U	U	Y
1442	Y	Y	Y	Y	Y	Y	N	N	Y	U	Y
2143	Y	Y	Y	Y	Y	Y	N	N	Y	U	Y
2174	Y	Y	Y	Y	N	N	N	N	N	U	Y
2536	Y	Y	Y	Y	Y	N	N	N	N	Y	Y
2555	Y	N	Y	Y	N	U	N	Y	U	N	Y
2696	Y	Y	Y	Y	Y	Y	N	N	N/A	Y	Y
2716	Y	Y	Y	Y	Y	Y	N	N	N	N	Y
6846	Y	Y	Y	Y	Y	Y	N	N	N	N	Y
11672	Y	Y	Y	Y	N	U	N	N	U	N	Y

⁴ Cardiff University checklist titled 'Questions to assist with the critical appraisal of an observational study eg cohort, case control, cross-sectional. (Type IV evidence)' were used. The NICE checklist responses were then applied as follows:

++ Indicates that for that particular aspect of study design, the study has been designed or conducted in such a way as to minimise the risk of bias.

+ Indicates that either the answer to the checklist question is not clear from the way the study is reported, or that the study may not have addressed all potential sources of bias for that particular aspect of study design.

- Should be reserved for those aspects of the study design in which significant sources of bias may persist.

Not reported (NR) should be reserved for those aspects in which the study under review fails to report how they have (or might have) been considered.

Not applicable (NA) Should be reserved for those study design aspects that are not applicable given the study design under review (for example, allocation concealment would not be applicable for case control studies)

Table D.9: Summary of the methodological quality of included non-comparative observational studies – results, interpretation and overall assessment

	<i>Results</i>			<i>Interpretation and discussion</i>				<i>Overall assessment</i>	<i>Quality score (++, + or -)</i>
	5.1 Are tables/graphs adequately labelled and understandable?	5.2 Are you confident with the authors' choice and use of statistical	5.3 Can the results be applied to the local situation?	6.1 Do the study results answer the original question?	6.2 Are limitations or weaknesses identified?	6.3 Do the inferences/conclusions make sense?	6.4 Would you be able to replicate the study?	7.1 As far as can be ascertained from the paper, how well was the study conducted?	
727	Y	Y	N	Y	Y	Y	Y	Y	+
739	Y	Y	Y	Y	N	Y	Y	Y	+
932	Y	Y	Y	Y	N	Y	Y	Y	+
1442	Y	Y	Y	Y	Y	Y	Y	Y	+
2143	Y	Y	Y	Y	Y	Y	Y	Y	+
2174	Y	Y	Y	Y	Y	Y	Y	Y	+
2536	Y	Y	Y	Y	Y	Y	Y	Y	+
2555	Y	N/A	Y	Y	N	Y	Y	Y	+
2696	Y	Y	Y	Y	Y	Y	Y	Y	+
2716	Y	Y	Y	Y	Y	Y	Y	Y	+
6846	Y	Y	Y	Y	Y	Y	Y	Y	+
11672	N	N	Y	Y	N	Y	Y	Y	+

Table D.10a: Quality assessments of the cost-effectiveness studies

Hirst et al (#1126)		
	Yes / partly / no / unclear / not applicable	Comments
Section 1: Applicability		
1.1 Is the study population appropriate for the topic being evaluated?	Yes	Not explicit but effectiveness data were taken from a trial of the general population.
1.2 Are the interventions appropriate for the topic being evaluated?	Yes	
1.3 Is the system in which the study was conducted sufficiently similar to the current UK context?	Partly	Australian healthcare system is publicly funded. However, awareness and risk of sun exposure may be different than in the UK.
1.4 Was/were the perspective(s) clearly stated and what were they?	Yes	Societal (Australian).
1.5 Are all direct health effects on individuals included, and are all other effects included where they are material?	Yes	
1.6 Are all future costs and outcomes discounted appropriately?	Partly	Discounting at 5%p.a.
1.7 Is the value of health effects expressed in terms of quality-adjusted life years (QALYs)?	Yes	
1.8 Are costs and outcomes from other sectors fully and appropriately measured and valued?	Not applicable	
Overall judgement: directly applicable/partially applicable/not applicable	Partially applicable	Data were drawn from an Australian population with potentially differing risk and existing awareness of dangers of sun exposure.
Section 2: Study limitations		
2.1 Does the model structure adequately reflect the nature of the topic under evaluation?	Yes	
2.2 Is the time horizon sufficiently long to reflect all important differences in costs and outcomes?	Yes	
2.3 Are all important and relevant outcomes included?	Yes	
2.4 Are the estimates of baseline outcomes from the best available source?	Yes	
2.5 Are the estimates of relative 'treatment' effects from the best available source?	Yes	
2.6 Are all important and relevant costs included?	Yes	
2.7 Are the estimates of resource use from the best available source?	Yes	

Hirst et al {#1126}		
	Yes / partly / no / unclear / not applicable	Comments
2.8 Are the unit costs of resources from the best available source?	Yes	
2.9 Is an appropriate incremental analysis presented or can it be calculated from the data?	Yes	
2.10 Are all important parameters whose values are uncertain subjected to appropriate sensitivity analysis?	Yes	
2.11 Is there any potential conflict of interest?	No	
2.12 Overall assessment: minor limitations/potentially serious limitations/very serious limitations	Minor limitations	

Table D.10b: Quality assessments of the cost-effectiveness studies

Gordon et al (#2119)		
	Yes / partly / no / unclear / not applicable	Comments
Section 1: Applicability		
1.1 Is the study population appropriate for the topic being evaluated?	Yes	
1.2 Are the interventions appropriate for the topic being evaluated?	Yes	
1.3 Is the system in which the study was conducted sufficiently similar to the current UK context?	Partly	Australian healthcare system is publicly funded. However, awareness and risk of sun exposure may be different than in the UK.
1.4 Was/were the perspective(s) clearly stated and what were they?	Yes	Societal (Australian)
1.5 Are all direct health effects on individuals included, and are all other effects included where they are material?	Yes	
1.6 Are all future costs and outcomes discounted appropriately?	No	Study stated that this was not required as trial data were used to populate the model.
1.7 Is the value of health effects expressed in terms of quality-adjusted life years (QALYs)?	No	Skin cancers averted but this is a relevant outcome.
1.8 Are costs and outcomes from other sectors fully and appropriately measured and valued?	Not applicable	
Overall judgement: directly applicable/partially applicable/not applicable	Partially applicable	
Section 2: Study limitations		
2.1 Does the model structure adequately reflect the nature of the topic under evaluation?	Yes	
2.2 Is the time horizon sufficiently long to reflect all important differences in costs and outcomes?	No	Only 5 years.
2.3 Are all important and relevant outcomes included?	Yes	
2.4 Are the estimates of baseline outcomes from the best available source?	Yes	
2.5 Are the estimates of relative 'treatment' effects from the best available source?	Yes	
2.6 Are all important and relevant costs included?	Yes	
2.7 Are the estimates of resource use from the best available source?	Yes	

Gordon et al {#2119}		
	Yes / partly / no / unclear / not applicable	Comments
2.8 Are the unit costs of resources from the best available source?	Yes	
2.9 Is an appropriate incremental analysis presented or can it be calculated from the data?	Yes	
2.10 Are all important parameters whose values are uncertain subjected to appropriate sensitivity analysis?	Yes	
2.11 Is there any potential conflict of interest?	No	
2.12 Overall assessment: minor limitations/potentially serious limitations/very serious limitations	Potentially serious limitations	

Table D.10c: Quality assessments of the cost-effectiveness studies

Kyle et al {#2622}	Yes / partly / no / unclear / not applicable	Comments
Section 1: Applicability		
1.1 Is the study population appropriate for the topic being evaluated?	Yes	
1.2 Are the interventions appropriate for the topic being evaluated?	Yes	
1.3 Is the system in which the study was conducted sufficiently similar to the current UK context?	Partly	US healthcare system is predominantly privately funded. Awareness and risk of sun exposure may be different than in the UK.
1.4 Was/were the perspective(s) clearly stated and what were they?	Yes	Societal (US)
1.5 Are all direct health effects on individuals included, and are all other effects included where they are material?	Yes	
1.6 Are all future costs and outcomes discounted appropriately?	Partly	Discounting at 3%p.a.
1.7 Is the value of health effects expressed in terms of quality-adjusted life years (QALYs)?	Yes	
1.8 Are costs and outcomes from other sectors fully and appropriately measured and valued?	Not applicable	
Overall judgement: directly applicable/partially applicable/not applicable	Partially applicable	
Section 2: Study limitations		
2.1 Does the model structure adequately reflect the nature of the topic under evaluation?	Yes	
2.2 Is the time horizon sufficiently long to reflect all important differences in costs and outcomes?	Yes	
2.3 Are all important and relevant outcomes included?	Yes	
2.4 Are the estimates of baseline outcomes from the best available source?	No	Data from a before and after survey
2.5 Are the estimates of relative 'treatment' effects from the best available source?	No	Data from a before and after survey
2.6 Are all important and relevant costs included?	Yes	
2.7 Are the estimates of resource use from the best available source?	Yes	

Kyle et al {#2622}	Yes / partly / no / unclear / not applicable	Comments
2.8 Are the unit costs of resources from the best available source?	Yes	
2.9 Is an appropriate incremental analysis presented or can it be calculated from the data?	Yes	
2.10 Are all important parameters whose values are uncertain subjected to appropriate sensitivity analysis?	Partly	No probabilistic sensitivity analysis.
2.11 Is there any potential conflict of interest?	No	
2.12 Overall assessment: minor limitations/potentially serious limitations/very serious limitations	Potentially serious limitations	Effectiveness data from a simple before and after survey with no comparator.

Table D.10d: Quality assessments of the cost-effectiveness studies

Matrix Evidence {#16811}		
	Yes / partly / no / unclear / not applicable	Comments
Section 1: Applicability		
1.1 Is the study population appropriate for the topic being evaluated?	Yes	
1.2 Are the interventions appropriate for the topic being evaluated?	Yes	
1.3 Is the system in which the study was conducted sufficiently similar to the current UK context?	Partly	All studies of effectiveness included in the model were outside the UK, although applied to a UK population.
1.4 Was/were the perspective(s) clearly stated and what were they?	Yes	Government (local and national), employers.
1.5 Are all direct health effects on individuals included, and are all other effects included where they are material?	Yes	
1.6 Are all future costs and outcomes discounted appropriately?	No	Costs were not discounted.
1.7 Is the value of health effects expressed in terms of quality-adjusted life years (QALYs)?	Yes	
1.8 Are costs and outcomes from other sectors fully and appropriately measured and valued?	Not applicable	
Overall judgement: directly applicable/partially applicable/not applicable	Partially applicable	
Section 2: Study limitations		
2.1 Does the model structure adequately reflect the nature of the topic under evaluation?	Yes	
2.2 Is the time horizon sufficiently long to reflect all important differences in costs and outcomes?	Yes	
2.3 Are all important and relevant outcomes included?	Yes	
2.4 Are the estimates of baseline outcomes from the best available source?	No	Utilities were derived from expert opinion.
2.5 Are the estimates of relative 'treatment' effects from the best available source?	Partially applicable	Studies had limited follow up and so the persistence of effect had to be assumed.
2.6 Are all important and relevant costs included?	Yes	
2.7 Are the estimates of resource use from the best available source?	Yes	

Matrix Evidence {#16811}		
	Yes / partly / no / unclear / not applicable	Comments
2.8 Are the unit costs of resources from the best available source?	Yes	
2.9 Is an appropriate incremental analysis presented or can it be calculated from the data?	Yes	
2.10 Are all important parameters whose values are uncertain subjected to appropriate sensitivity analysis?	Yes	
2.11 Is there any potential conflict of interest?	No	
2.12 Overall assessment: minor limitations/potentially serious limitations/very serious limitations	Potentially serious limitations	

Table D.10e: Quality assessments of the cost-effectiveness studies

Andronis et al {#16819}		
	Yes / partly / no / unclear / not applicable	Comments
Section 1: Applicability		
1.1 Is the study population appropriate for the topic being evaluated?	Yes	
1.2 Are the interventions appropriate for the topic being evaluated?	Yes	
1.3 Is the system in which the study was conducted sufficiently similar to the current UK context?	Partially applicable	All studies of effectiveness included in the model were outside the UK, although applied to a UK population.
1.4 Was/were the perspective(s) clearly stated and what were they?	Yes	Public sector.
1.5 Are all direct health effects on individuals included, and are all other effects included where they are material?	Yes	
1.6 Are all future costs and outcomes discounted appropriately?	Partially applicable	Costs and benefits discounted at 3.5%p.a.
1.7 Is the value of health effects expressed in terms of quality-adjusted life years (QALYs)?	Yes	
1.8 Are costs and outcomes from other sectors fully and appropriately measured and valued?	Not applicable	
Overall judgement: directly applicable/partially applicable/not applicable	Partially applicable	
Section 2: Study limitations		
2.1 Does the model structure adequately reflect the nature of the topic under evaluation?	Yes	
2.2 Is the time horizon sufficiently long to reflect all important differences in costs and outcomes?	Yes	
2.3 Are all important and relevant outcomes included?	Yes	
2.4 Are the estimates of baseline outcomes from the best available source?	No	Utilities were derived from expert opinion.
2.5 Are the estimates of relative 'treatment' effects from the best available source?	Partly	Studies had limited follow up and so the persistence of effect had to be assumed. The behavioural change outcomes in studies did not always map well onto the model outcomes and so assumptions had to be made.
2.6 Are all important and relevant costs included?	Yes	

Andronis et al {#16819}		
	Yes / partly / no / unclear / not applicable	Comments
2.7 Are the estimates of resource use from the best available source?	Yes	
2.8 Are the unit costs of resources from the best available source?	Yes	
2.9 Is an appropriate incremental analysis presented or can it be calculated from the data?	Yes	
2.10 Are all important parameters whose values are uncertain subjected to appropriate sensitivity analysis?	Yes	
2.11 Is there any potential conflict of interest?	No	
2.12 Overall assessment: minor limitations/potentially serious limitations/very serious limitations	Potentially serious limitations	

Table D.10f: Quality assessments of the cost-effectiveness studies

Shih et al {#2124}		
	Yes / partly / no / unclear / not applicable	Comments
Section 1: Applicability		
1.1 Is the study population appropriate for the topic being evaluated?	Yes	
1.2 Are the interventions appropriate for the topic being evaluated?	Yes	
1.3 Is the system in which the study was conducted sufficiently similar to the current UK context?	Partially applicable	Australian healthcare system is publicly funded. However, awareness and risk of sun exposure may be different than in the UK.
1.4 Was/were the perspective(s) clearly stated and what were they?	Yes	Government and societal.
1.5 Are all direct health effects on individuals included, and are all other effects included where they are material?	Yes	
1.6 Are all future costs and outcomes discounted appropriately?	No	Costs were not discounted.
1.7 Is the value of health effects expressed in terms of quality-adjusted life years (QALYs)?	No	Disability Adjusted Life Years
1.8 Are costs and outcomes from other sectors fully and appropriately measured and valued?	Not applicable	
Overall judgement: directly applicable/partially applicable/not applicable	Partially applicable	
Section 2: Study limitations		
2.1 Does the model structure adequately reflect the nature of the topic under evaluation?	No	Modelling using effectiveness in this way does not account for any confounding issues that may explain the differences in effectiveness between populations.
2.2 Is the time horizon sufficiently long to reflect all important differences in costs and outcomes?	Yes	
2.3 Are all important and relevant outcomes included?	Yes	
2.4 Are the estimates of baseline outcomes from the best available source?	No	Data from a cancer registry.
2.5 Are the estimates of relative 'treatment' effects from the best available source?	No	Data from a cancer registry
2.6 Are all important and relevant costs included?	Yes	

Shih et al {#2124}		
	Yes / partly / no / unclear / not applicable	Comments
2.7 Are the estimates of resource use from the best available source?	Yes	
2.8 Are the unit costs of resources from the best available source?	Yes	
2.9 Is an appropriate incremental analysis presented or can it be calculated from the data?	Yes	
2.10 Are all important parameters whose values are uncertain subjected to appropriate sensitivity analysis?	Yes	
2.11 Is there any potential conflict of interest?	No	
2.12 Overall assessment: minor limitations/potentially serious limitations/very serious limitations	Very serious limitations	Effectiveness data were not taken from any trial.

APPENDIX E

Data Extraction Forms for Cost-Effectiveness Studies

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Aarestrup (2014) (50) Design Cluster RCT Country Denmark Quality Poor [-]</p>	<p>Objectives Does an educational intervention targeting teenagers affect their sunbed use and intentions and attitudes towards sunbed use. Outcomes and outcome measurement (1) Sunbed use in past 6 months gathered by self-report questionnaire. (2) Sunbed use intentions: Yes/No question on intention to use a sunbed in the future. (3) Attitudes towards sunbed use measured by self-report questionnaire. Attitudes assessed using six Likert-type items with 5-point responses (strongly agree to strongly disagree).</p>	<p>School children. Sample size 2351 pupils with pre- and post-questionnaires were analysed (996 from intervention schools and 1355 from control schools.) Age 14-17 years Gender 51% f Ethnicity Not reported</p>	<p>Intervention An e-magazine entitled Your Body Your Life: A Teaching Material on Sunbed Use Among Adolescents, aimed at school children. The e-magazine combined short films, advertisements, campaign materials, paintings, social media, poetry, fiction, and literature, with the aim to encourage non-use of sunbeds. It provided information on the health risks of sunbed use and the appearance-damaging effects. There were three sections: "Body and Identity," "Empathy and Responsibility," and "Sickness and Death", each providing six exercises involving an oral presentation, teamwork, advocacy, writing, an creative work, and using social media and debating scientific facts. The teacher led 3-9 classroom sessions. A comprehensive teacher's guide with facts and instructions was included. Comparators Control schools: no intervention. Pre- and post-questionnaires only.</p>	<p>NR (baseline data adjusted for in analysis)</p>	<p>(1) <u>Sunbed use in past 6 months.</u> Adjusted odds ratio (95% CI; p value): Sunbed use: Girls: 0.60 (0.42 to 0.86; p=0.005); Boys: 0.58 (0.35 to 0.96; p=0.03) Non-adjusted odds ratio (95% CI; p value): Boys: intervention group had 35% reduced risk of sunbed use in the past 6 months compared to control. None of the interaction terms was statistically significant. (2) <u>Sunbed use intentions.</u> Adjusted odds ratio (95% CI; p value): Girls: 0.76 (95% CI: 0.43 to 1.37; NS). Boys: 0.41 (95% CI: 0.15 to 1.11; NS). (3) <u>Attitudes toward sunbed use</u> No significant effect of the intervention on either girls or boys.</p>	<p>A significant impact on attitudes toward sunbed use; the intraclass correlation coefficient was estimated to be 6.0% and 7.8% for girls and boys, respectively.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
Adams (2009) (60) Design RCT Country USA Quality Poor [-]	<p>Objectives To examine the mediating effects of a special case of the decisional balance construct where the pros of competing behaviours (i.e. sun protection versus exposure) were measured rather than the pros and cons of the same behaviour.</p> <p>Outcomes and outcome measurement (1) Pros for sun protection were rated by participants for the importance of four potential gains for sun protective behaviours on a scale from 1 ('Not very important') to 5 ('Extremely important'). (2) Pros for sun exposure were rated by participants by importance of four potential gains for sun exposure behaviours. (3) Sun protection behaviour: self-report on how often participants practiced 7 recommended sun protection behaviours on a 5-point Likert scale with anchors of 1 ('Never') to 5 ('Always').</p>	<p>Adolescents from private clinic sites. Sample size 819 Age 10 to 16 years Gender 53.5% f Ethnicity White: 58.4% Black: 6.6% Hispanic: 13.1% Asian/Pacific Islander: 3.2% Multiracial: 14.5% Other: 3.5%</p>	<p>Intervention An adapted version of the Sun Smart expert-system computer program. The interactive tailored computer session assessed self-reported stage of change, decisional balance, self-efficacy, and processes of change, and generated tailored feedback reports. The intervention was a computerised expert system kiosk at the primary care office, monthly stage-matched phone calls, a printed manual, and mail contact for 24 months. Participants completed the expert system at baseline and at 12 months.</p> <p>Comparator Physical activity and diet intervention promoting physical activity and healthy eating behaviour, based on Social Cognitive Theory and the Transtheoretical Model.</p>	<p>(1) Pros for sun protection (mean, SD) SunSmart: 15.04 (3.12); Control: 3.86 (4.14) (2) Pros for sun exposure (mean, SD) SunSmart: 10.16 (4.14); Control: 8.13 (5.00) (3) Sun protection behaviour SunSmart: 22.51 (4.51); Control: 22.51 (5.48).</p>	<p>(1) Pros for sun protection SunSmart (6, 12 and 24 months): 15.80 (2.97); 16.33 (3.22); 16.16 (3.85) Control (6, 12 and 24 months): 14.90 (4.23); 15.06 (4.45); 15.13 (4.41) (2) Pros for sun exposure SunSmart (6, 12 and 24 months): 8.16 (3.59); 8.52 (3.77); 9.68 (4.60) Control (6, 12 and 24 months): 9.72 (4.54); 9.72 (4.61); 0.06 (4.72) (3) Sun protection behaviour SunSmart (6, 12 and 24 months): 4.32 (4.63); 24.46 (4.92); 24.90 (5.04). Control (6, 12 and 24 months): 23.24 (5.22); 23.04 (5.63); 23.04 (5.86).</p>	<p>The latent slope for sun protection behaviour was related to the treatment group with more positive increases in these variables found for adolescents in the SunSmart intervention in relation to the comparison group. These regression models established 'treatment to outcome' and 'treatment to mediator' path relationships. Latent growth curve modelling (LGCM) showed treatment group status was not related to the latent slopes for the pros of protection or exposure. .</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Aneja 2012 (70)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality Poor [-]</p>	<p>Objectives To determine if interactive computer-assisted learning patient education delivered through Skinsafe, used as a part of a multimodal patient education programme, could influence use of sun-protective clothing and sunscreen.</p> <p>Outcomes and outcome measurement Change in frequency of using sun-protective clothing and sunscreen after 3 months measured by self-report via a survey on the day of enrolment and 3 months afterwards.</p>	<p>Individuals attending a dermatology clinic.</p> <p>Sample size 132</p> <p>Age 18 years of age and older.</p> <p>Gender NR</p> <p>Ethnicity NR</p>	<p>Intervention A melanoma brochure plus multimodal education programme.</p> <p>Comparators A melanoma brochure..</p>	<p>“always” or “frequently” use sun-protective clothing: 34.7%. “always” or “frequently” use sunscreen: 39.1%.</p>	<p>1) Frequency of <u>using sun-protective clothing</u> Odds ratio 2.4 (95% CI, 1.09-5.29; p=0.03) (favouring intervention group).</p> <p>2) Frequency of <u>using sunscreen</u>: Odds ratio 1.26 (0.58-2.77; p= 0.56)</p>	<p>Intervention group were 2.4 times more likely to wear sun-protective clothing at the end of the study than control. Intervention group were more likely use sunscreen, but this was not statistically significant.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Armstrong 2009 (68)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality Moderate [+]</p>	<p>Objectives To evaluate the effectiveness of text messaging as reminders to improve adherence to sunscreen application.</p> <p>Outcomes and outcome measurement Adherence to sunscreen use was captured in real time using transmitting electronic monitors attached to the sunscreen tube.</p>	<p>Adults owning a mobile phone.</p> <p>Sample size 70</p> <p>Age (SD) Intervention group: 32.9 (13.4) Control group: 34.3 (14.2);</p> <p>Gender 70% female</p> <p>Ethnicity White: 49% Black: 27% Hispanic 4%, Other: 20%</p>	<p>Intervention Daily text-message reminders via mobile phone for 6 weeks. The text-message had 2 components: a “hook” text detailing daily local weather information and a “prompt” text reminding users to apply sunscreen.</p> <p>Comparator No text reminders.</p>	<p>NR</p>	<p>Adherence to sunscreen use Mean adherence: 23.6 days (95% CI, 20.2-26.9); Daily adherence rate: 56.1% (95% CI: 48.1%-64.1%).</p> <p>Control group: Mean adherence: 12.6 days (95% CI: 9.7-15.5). Daily adherence rate: 30.0% (23.1%-36.9%) Significant difference in daily adherence between the groups (p <0.001). In the control group, the adherence rate continued to decrease from week 1 throughout the study, with stabilisation at approximately 20% adherence at the end of the study. Adherence rate remained stable in the reminder group.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Armstrong 2011 (59)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality Good [++]</p>	<p>Objectives To assess the efficacy of online videos as an educational medium compared to an information pamphlet to improve sunscreen behavioural outcomes and sunscreen application knowledge.</p> <p>Outcomes and outcome measurement Adherence to sunscreen use recorded as number of days per week.</p>	<p>Adults with internet access.</p> <p>Sample size 94 (47 in each group).</p> <p>Age (mean years) Pamphlet: 39.6 (+/- 14); Video: 34.7 (+/- 12).</p> <p>Gender (female) Pamphlet: 44.7% f Video: 55.3% f</p> <p>Ethnicity <i>White:</i> Pamphlet: 61.7%; Video: 46.8%. <i>Black:</i> Pamphlet: 2.1%; Video: 4.3%. <i>Hispanic:</i> Pamphlet: 4.3%; Video: 10.6%.</p>	<p>Intervention Online video: addressed how sunscreens work to protect skin, different types of sunscreens, importance of sunscreen use, and proper application.</p> <p>Comparator Pamphlet: identical educational content as the video but delivered in a pamphlet.</p>	<p>Adherence to sunscreen use</p> <p>Pamphlet group: 2.0 (3.0) days per week</p> <p>Video group: 1.7 (2.5) days per week Similar between groups, p=0.552</p>	<p>Adherence to sunscreen use</p> <p>Pamphlet group: 2.4 (3.0) days per week</p> <p>Video group: 3.4 (2.6) days per week Change in sunscreen use from baseline to study end significantly different between groups, p<0.001</p>	<p>Post intervention analysis found that there was significantly greater improvement in the knowledge scores from video group members compared to the pamphlet group (p = 0.003). Video group had significantly higher frequency of sunscreen use per week following study. Pamphlet group showed no statistically significant differences in behaviour after the study. Authors concluded that this was due to the nature of the educational vehicle since the content in both delivery systems was identical.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Aulbert (2009) (108)</p> <p>Design A non-randomised, before/after, intervention study</p> <p>Country Germany</p> <p>Quality Moderate [+]</p>	<p>Objectives To establish a feasible certification programme for sun protection in a German child day-care centre, to achieve better child sun protection and reduce skin cancer incidence in the long term.</p> <p>Outcomes and outcome measurement (1) Sun protection measured by eleven multiple choice questions completed before and after the training session. (2) Sunscreen use, number of children wearing a hat and the percentage of shaded area in the playground was observed,</p>	<p>Children, parents and staff at a University hospital kindergarten.</p> <p>Sample size 1 kindergarten; about 150 children. Recruited: 12 staff and 46 parents. Analysed: 12 staff and 27 parents.</p> <p>Age (years) Children: 0 to 6.</p> <p>Gender NR</p> <p>Ethnicity Most probably predominantly Caucasian due to focus in background section and increased prevalence of melanoma.</p>	<p>Intervention Training session</p> <p>Comparators No comparator</p>	<p>Sun protection questionnaire average: staff: 8 of 14 points; parents: 6 of 12 points.</p> <p>Children wearing a hat: 13.2%;</p> <p>Percentage of shaded area: 70–80% (trees and one extendable sun panel which was extended on three of five observational days).</p>	<p>Sun protection questionnaire average: Staff: 12 of 14 points (p=0.002); Parents: 11 of 12 points (p=0.001); Children wearing a hat: 73%; Percentage of shaded area: 90%. After intervention, 41.4% of parents reported that they got the child to avoid direct sun more often, 58.3% used sunscreen more often, 44.4% reported putting the child in a hat more often, and 33.3% reported putting the child in a long sleeved shirt more often.</p> <p>Sunscreen use increased, 58.8% of staff members reported a more regular application of sunscreen to the children. The intervention failed in keeping the children inside during the most intense UV and in educating the staff members to be a convincing example of sun protection by wearing appropriate clothes. The clothing habit of the children (excluding head wear) showed no alteration after the intervention. The clothing habit of staff members did not change: hat use and appropriate clothes did not become more common.</p>	<p>Staff and parents had a significant gain in knowledge concerning sun related issues</p>

Study details	Objectives and outcomes	Participants	Study methods	Results	Comments
<p>Bandi (2010) (117)</p> <p>Design Nationally</p>	<p>Objectives To assess the population prevalence and</p>	<p>US adolescents and their parents.</p> <p>Sample size 1589</p> <p>Age</p>	<p>Nationally representative cross-sectional telephone survey, Ultraviolet radiation</p>	<p>Adolescents who received physician sun protection counselling were significantly more likely to report regular</p>	<p>Counselling was positively associated with regular sunscreen use, appropriate sunscreen</p>

Study details	Objectives and outcomes	Participants	Study methods	Results	Comments
<p>representative cross-sectional telephone survey</p> <p>Country USA</p> <p>Quality Moderate [+]</p>	<p>correlates of ever receiving physician advice to practice sun protection and whether such counselling is associated with sun protection behaviours in adolescents and their parents.</p>	<p>Adolescents: 11-18; Parents: 27 - 46+</p> <p>Gender (female) Adolescents: 49% Parents: 77%</p> <p>Ethnicity Non-white, non-Hispanic, Hispanic: Adolescents 284 (30%); Parents 207 (24%); White, non-Hispanic Adolescents: 1295 (70%); Parents 1377 (76%).</p> <p>Other sample characteristics given for just the parents were, n (%): Education: High school degree or less – 338 (47); Some college – 500 (25); College graduate – 747 (28). Income level: Less than or equal to \$50,000 – 406 (42); Greater than \$50,000 – 1042 (50); Unknown – 141 (8).</p>	<p>exposure behaviours, measured using five-point Likert items ranging from 'often' to 'never'. Measured the frequency of summer sun protection on 6 recommended behaviours (shade or umbrella, avoiding sun, use of hats, shirts, and trousers, and sunscreen use) when out on a very sunny day in summer for more than 1 hour. Measured 4 sunscreen-specific practices (use at beach or pool, on face and exposed body areas anytime out in sun for more than 15 mins., and reapplication when out in sun all day). Responses were categorized into 3 levels: regular (always or often), intermittent (sometimes), and never/irregular (rarely or never).</p> <p>Parent behaviours regarding child sun protection: Parents were asked six point Likert items ranging from every day to never measuring the frequency with which they insisted that their child practice 4 different sun protection behaviours</p>	<p>sunscreen use (Adjusted prevalence: 43%) and intermittent wide-brimmed hat use (15%) compared to those who did not receive counselling (30% and 9% respectively). Counselling was not associated with avoiding peak sun exposure (regular: 17% vs. 15%), seeking the shade (regular: 21% vs. 20%), shirt (regular: 3% vs. 3%) or trouser use (regular: 18% vs. 24%). Counselling had significant positive associations with the regular practice of sunscreen-specific behaviours, including using SPF 15+ sunscreen use at the beach or pool (regular 58% vs. 46%), use of sunscreen on the face (regular 29% vs. 19%) and body (regular 24% vs. 16%), and reapplication when in the sun all day (regular: 29% vs. 18%). Parents who received counselling were also more likely to report that they regularly insisted on summer sunscreen use for their children (35%) compared to those who did not receive counselling (26%), but this relationship was not seen for other parent rules, including insistence on wearing shirts (regular: 32% vs. 27%), hats</p>	<p>application practices, and intermittent hat use, but not with other recommended behaviours.</p>

Study details	Objectives and outcomes	Participants	Study methods	Results	Comments
			(sunscreen, hats, shirts, and shade or umbrella) in the past 30 days. Responses were categorized into 3 levels: regular (every day or most days), intermittent (half the time), and never/irregular (less than half the time, rarely, or never).	(regular 20% vs. 20%): or staying in the shade or under an umbrella (regular: 19% vs. 16%).	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
Buller 2008 (71) Design RCT Country USA Quality Poor [-]	Objectives Are changes in outcome expectations (knowledge and attitudes) and self-reported sun protection behaviour produced by a computer program different from those produced by a presentation and does combined presentation of the computer program and teacher presentation produce superior outcomes. Outcomes and outcome measurement (1) Sun safety knowledge measured by a questionnaire with 21, 25 and 39 questions for grades K to 1, 2 to 3 and 4 to 5, respectively. Scores were converted to z scores. (2) Sun protection behaviour measured by self-completion of questionnaire. 5 questions for grades K to 3 and 6 questions for grades 4 to 5. Converted to z scores. Lower score meant	School children Sample size 1033 (12 schools) Age (years) 5 to 13 Gender (female) 48.6% Ethnicity White: 52.6%; Black: 9.2%; Hispanic: 32.6%; Asian: 3.4%.	Intervention Combination computer program with teacher led presentation. The computer programs were tailored with age-appropriate sun safety education derived from the Sunny Days, Healthy Ways sun safety curriculum. The teacher led presentation was based on the same program and facilitated discussion and hands-on learning activities (with worksheets). Comparators (A) Computer program; (B) Teacher led presentation; (C) Skin cancer lecture;	(1) Mean sun safety knowledge Combination i: Grades K to 1: 10.53 Grades 2 to 3: 16.77 Grades 4 to 5: 24.92 Computer program: Grades K to 1: 10.66 Grades 2 to 3: 15.41 Grades 4 to 5: 25.55 Teacher led presentation: Grades K to 1: 10.28 Grades 2 to 3: 16.01 Grades 4 to 5: 26.40 (2) Sun protection behaviour (mean) Combination Grades K to 1: 10.44 Grades 2 to 3: 10.18 Grades 4 to 5: 12.37 Computer program: Grades K to 1: 10.42 Grades 2 to 3: 10.35 Grades 4 to 5: 12.73 Teacher led intervention: Grades K to 1: 10.66 Grades 2 to 3: 10.09 Grades 4 to 5: 12.26	(1) Mean sun safety knowledge Combination (means): Grades K to 1: 13.27 Grades 2 to 3: 19.88 Grades 4 to 5: 29.51 Computer program: Grades K to 1: 12.79 Grades 2 to 3: 17.10 Grades 4 to 5: 28.68 Teacher led presentation: Grades K to 1: 10.94 Grades 2 to 3: 17.76 Grades 4 to 5: 30.28 Students receiving the combination had a greater pretest-posttest increase in knowledge than the computer program group (t29 = 2.75, P = 0101) and the teacher-led presentation (t29 = 2.40, P = .0229). Differences between computer program and presentation were non-significant (t29 = 0.33, P = .7470). Race (F3, 55 = 9.23, P < .0001) and grade (F1, 28 = 9.51, P = .0046) were significantly associated with pretest-posttest changes in knowledge score, and the effect of treatments became stronger when controlling for them in the final model: both versus computer program only (t28 = 3.49, P = .0016) and versus teacher-led presentation only (t28 = 3.66, P = .0010), computer program versus presentation (t28 = 0.22, P = .8261). (2) Sun protection behaviour (means) Combination: Grades K to 1: 8.97 Grades 2 to 3: 9.76 Grades 4 to 5: 12.41 Computer program: Grades K to 1: 9.52 Grades 2 to 3: 10.08 Grades 4 to 5: 12.61

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
	better sun protection.				<p><u>Teacher led presentation:</u> Grades K to 1: 10.14 Grades 2 to 3: 9.78 Grades 4 to 5: 11.94 With grade as a covariate, no significant difference between the groups (both versus computer, $t_{28} = -0.32$, $P = .7481$; both versus teacher-led, $t_{28} = 0.05$, $P = .9617$; computer versus teacher-led, $t_{28} = 0.39$, $P = .6959$), but when it was included as a moderator, there was a significant effect of treatment ($F_{2,26} = 5.71$, $P = 0.0088$), grade ($F_{1,26} = 17.19$, $P = .0003$), and treatment by grade interaction ($F_{2,26} = 6.40$, $P = .0055$). Combination improved self-reported sun protection in lower but not higher grades over teacher-led presentation ($P = 0.005$).</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Buller 2011 (61)</p> <p>Design RCT</p> <p>Country USA (Colorado and Southern California)</p> <p>Quality Moderate [+]</p>	<p>Objectives Evaluate a school-based sun protection programme.</p> <p>Outcomes and outcome measurement Change in percentage of school districts which adopt a sun protection policy between intervention group the control group. School board-approved policy documents were coded to measure sun protection policies for students,</p>	<p>Public school districts</p> <p>Sample size (public school districts) Intervention: 55. Control: 57.</p> <p>Age Public schools teaching pupils in grades K-12.</p> <p>Gender (female) 74%</p> <p>Ethnicity White 83%</p>	<p>Intervention Sun Safe Schools programme, was delivered to all districts. Policy information, tools, and technical assistance were provided through printed materials, a website, meetings with administrators, and presentations to school boards.</p> <p>Comparator Districts received a mailing directing them to national and state resources on school sun protection (letter from the state health department, NASBE's Fit Healthy and Ready to Learn Part II: Sun Safety Guidebook, CDC's Guidelines for School Programs to Prevent Skin Cancer, information about state sun safety regulations; and in California, two information sheets from the state's skin cancer prevention programme).</p>	<p>103/112 school districts provided written policies (52 in intervention and 51 in control; 51 in Colorado and 52 in S. California)</p>	<p>Total adjusted school policy scores: Content: Intervention: 2.34 (0.32) Control: 1.44 (SE 0.33) (p = 0.052)</p> <p>Strength: Intervention: 3.10 (0.43) (p = 0.035) Control: 1.79 (0.44)</p> <p>12 districts in the intervention group (4 in Colorado, 8 in S. California) and 6 districts in the control group (1 in Colorado and 5 in S. California) adopted or strengthened a sun protection policy between baseline and 2-year follow-up. The percentage of districts that made any change was not statistically different by group (24% in intervention; 12% in control; chi-square [df =1] =2.16, p=0.142; percentage change was not modified by state chi-square [df =1] =3.60, p=0.058). More districts receiving the intervention will adopt a school-board approved</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
					<p>sun protection policy than districts in the control condition.</p> <p>Districts receiving the intervention had higher sun protection policy strength scores than control districts in the complete analysis of 100 school districts with policy scores at baseline and follow-up.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
Carli 2008 (113) Design RCT Country Italy Quality Moderate [+]	Objectives To analyze the effects of UV Index (UVI) information provided by low cost, commercially available UVI sensors on major indicators of sun-tanning behaviour and frequency of sunburns. Outcomes and outcome measurement (1) Average time of sun exposure. (2) Average time of sun exposure between noon and 4pm; (3) Use of sunscreen, t shirt, sunglasses, hat; (4) Days with sunburn Answers to questions on questionnaire	University students Sample size 91 Age (years) Intervention: 24 Control: 23.7 Gender (female) 69.8% Ethnicity NR	Intervention A diary completed every day of sunbathing + UV meter to be used during intentional sun exposure and a short leaflet with advice for safe sun-exposure in accordance with the UVI value. Comparators A diary completed every day of sunbathing + a short leaflet with advice for safe sun-exposure in accordance with the UVI value.	NR	Use of sun screen (yes): Intervention: 41.4% Control: 47.2% (p=0.02) Use of T shirt (yes): Intervention: 25.3% Control: 24.0% (p=0.56) Use of sunglasses (yes): Intervention: 23.9% Control: 30.8% (p=0.003) Use of hat (yes): Intervention: 6.4% Control: 10.2% (p=0.007) Sunburns (experienced): Intervention: 27.8% Control: 21.5%, p=0.004 Odds ratio 1.60 (1.23 to 2.0). Intervention group had 60% greater odds of becoming sunburnt than those in the control group.	The use of UVI sensors changed the sun protective behaviour of sunbathers in the direction of less use of sun protective measures.

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Chait (2011) (41) <u>Design</u> RCT <u>Country</u> USA <u>Quality</u> [+]</p>	<p><u>Objectives</u> Will a dissonance induction intervention change UV-related behaviours.</p> <p><u>Outcomes and outcome measurement</u> (1) Tanning intentions (indoor, outdoor, sunless), assessed by asking participants to estimate how many times they intended to tan and how likely they were to tan (7 point Likert scale) in the next month. (2) Sunscreen use intentions. Frequency of intention to use sun protection on the face or body in the next month and in the next 12 months was assessed on a 5-point scale (0 (never) to 4 (always)). (3) Indoor tanning behaviour (4) Outdoor tanning behaviour (5) Sunless tanning behaviour (6) Use of sunscreen; participants were asked how often they used at least SPF15 sunscreen on their face when in the sun in the past month and on their body (5 point scale).</p>	<p>Young adults <u>Sample size</u> 260 <u>Age (years)</u> 19.8 (19 to 25) <u>Gender (female)</u> 100% <u>Ethnicity</u> White: 86%. Non-Hispanic: 90%.</p>	<p><u>Intervention</u> Dissonance induction strategy for tanning condition: session focusing on the negative aspects of the "tan ideal" - consisted of videos, focus groups, tasks, role play. <u>Comparators</u> (1) Dissonance induction strategy for healthy lifestyle condition: focus on healthy eating and exercising, using the same methods (videos, focus groups etc.) (2) Psychoeducational control focused on tanning session discussing the risk of skin cancer and need for skin protection, using the same methods (videos, focus groups etc.)</p>	<p>Not applicable</p>	<p>Relative to a healthy lifestyle control condition, the tanning condition resulted in a decrease in intentions to tan indoors and in actual number of hours spent sunbathing, and an increase in intentions to use sunscreen on the body. Compared to a psycho-educational control condition, the other groups seemed to have been equally successful and unsuccessful on different measures of UV-related behaviours and intentions.</p>	<p>Study findings suggest that a dissonance induction intervention for tanning may be successful, but it requires further study.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
Cooper (2014) (38) Design RCT Country USA Quality [-]	Objectives Do messages manipulating the efficacy of a health behaviour moderate health outcomes when participants are presented with a fear appeal that makes death thought conscious. Outcomes and outcome measurement Sun protection intentions assessed by 5 items (1 (never or not at all) to 7(always or extremely)).	Young adults Sample size 147 Age (years) 24.5 (10.34) Gender (female) 65% Ethnicity White: 95% Black: NR Asian, American Indian and mixed race: 5%.	Intervention A cancer threat message followed by a delay or no delay, then messages highlighting the effectiveness or ineffectiveness of sun protection behaviours. Comparators (A) An appearance threat message followed by a delay or no delay, then messages highlighting the effectiveness or ineffectiveness of sun protection behaviours. (B) Neutral threat fear appeal followed by a delay or no delay, then messages highlighting the effectiveness or ineffectiveness of sun protection behaviours.	NR	3-way interaction between fear appeal, delay and efficacy, ($p=0.01$). When fear appeals primed conscious thoughts of death, framing sun protection as ineffective decreased sun protection intentions relative to framing sun protection as effective (sun protection scores 3.36 vs. 5.45, $p=0.02$). Fear appeals that did not consciously prime death, or appeals followed by a delay that allowed thoughts of death to fade from consciousness, did not interact with efficacy messages. Sun protection behaviours framed as effective increase sun protection behaviours among individuals exposed to a fear appeal that primes conscious thoughts of death relative to behaviour framed as ineffective.	Framing sun protection behaviours as effective after a fear appeal that does not prime death-related thoughts does not affect sun protection behaviours. Framing sun protection behaviours as effective or non-effective has no effect on sun protection intentions when death is no longer conscious. Efficacy moderates responses to conscious thoughts of death, but the results suggested that low efficacy decreased sun protection intentions (rather than high efficacy increasing intentions) when death thoughts were conscious (relative to other fear appeals).

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
Cox (2009) (40) <u>Design</u> RCT <u>Country</u> USA <u>Quality</u> [-]	<u>Objectives</u> To examine tanning outcomes as a function of priming tanning-relevant standards for attractiveness after reminders of death. <u>Outcomes and outcome measurement</u> (1) Choice of sun protection factor (SPF). (2) Frequency of intention to use sunscreen, assessed using 2 items, rated on a scale (1 (never) to 7 (always)).	Young adult females <u>Sample size</u> 53 <u>Age (years)</u> 22.98 (7.32) <u>Gender (female)</u> 100% <u>Ethnicity</u> Caucasian: 100%	<u>Intervention</u> Reading an article priming the appeal of pale skin, which included celebrity photographs. <u>Comparators</u> Reading a neutral article, which did not refer to skin tone or include celebrity photographs.	Not applicable	(1) Choice of SPF Article linking pale skin with attractiveness: reminders of death increased level of SPF chosen versus control group $F(1, 48) = 7.92, p = .01, d = 0.78$. Neutral article: no difference ($F < 1$). There were no significant differences between articles for those in the control condition (2) Sunscreen intentions Article linking pale skin with attractiveness: reminders of death increased sunscreen intentions versus control group, $F(1, 49) = 4.64, p = 0.04, d = 0.56$. Neutral article: reminders of death decreased sunscreen intentions versus control group, $F(1, 49) = 4.36, p = 0.04, d = 0.54$. When participants were reminded of death, the association between attractiveness and pale skin increased sunscreen intentions compared with those exposed to the neutral article. Sunscreen intentions were decreased in participants exposed to the neutral article	Participants reminded of death, reported greater preference for high sun protection sunscreen and greater intentions to use sunscreen after reading an article about the attractiveness of paler skin tones.

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
Craciun 2012 (66) Design RCT Country Worldwide Quality Poor [-]	Objectives To compare the effectiveness of motivational and volitional interventions in changing sunscreen use in women. Outcomes and outcome measurement Self reported sunscreen use: application of sun protection factor (SPF) 15+ before going out on sunny days strongly disagree (1) to strongly agree (4)..	Adult women Sample size 222 Age (mean) 25.04 (8.66, 18 to 66) Ethnicity NR	Intervention Motivational intervention combining risk and resource communication. Comparator (1) Volitional intervention asked participants to generate an action and a coping plan. Coping self-efficacy was measured. (2) Control group received a brief feedback on their skin type as a result of completing the questionnaire.	Sunscreen use (mean, SD) Motivational: 1.68 (0.86); Volitional: 1.60 (0.76); Control: 1.69 (0.80).	Sunscreen use at 2 weeks (mean, SD) Motivational: 1.78 (0.84); Volitional: 1.77 (0.74); Control: 1.70 (0.86). Sunscreen use at 1 month: Motivational: 1.77 (0.75); Volitional: 2.00 (0.91). Control: 1.75 (0.80); Control vs. motivational:(NS). Volitional group had a higher mean (1.94) than motivational group (mean = 1.73), $t(139) = 1.35$, $p < .09$, $d = .23$ and the control group (mean = 1.73), $t(156) = 1.45$, $p = .07$, $d = .23$.

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
Crane (2012) (9) Study design RCT Country USA Quality Moderate [+]	<p>Objectives</p> <p>To test the effectiveness of a partially tailored mailed intervention based on the Precaution Adoption Process Model, delivered in the spring over 3 years to parents and children.</p> <p>Outcomes and outcome measurement</p> <p>(1) Perceived melanoma risk. (2) Perceived non-melanoma risk Parents were asked what they thought was the likelihood of their child getting melanoma / non-melanoma skin cancer over his/her whole life. Responses were recorded on a scale (1 'no chance at all' to 7 'certain to happen'). (3) Perceived melanoma severity. (4) Perceived non-melanoma severity. Parents were asked about the difficulty of treating melanoma and the likelihood of dying from it. Overall measure was an average of responses on a 5-point scale (5 = greater perceived severity). (5) Knowledge of risk factors for skin cancer, measured by asking parents whether 11 different factors increased, decreased, or had no impact on</p>	<p>Parents and primary school children</p> <p>Sample size 867 (677 analysed)</p> <p>Age (years) 6</p> <p>Gender(female) 52.5%</p> <p>Ethnicity White: 100% Hispanic: 0% NOTE: Children born in 1998 (approximately 6 years old at baseline). 51.8% had fair white skin. (Note: parents whose children had dark skin, dark eye and dark hair colour were informed that the programme may be of minimal benefit due to the low skin cancer risk).</p>	<p>Intervention</p> <p>Three sets of educational newsletters about skin cancer and sun protection, based on Precaution Adoption Process Model, and related sun protection resources (e.g. swim shirt, hat, sunscreen). Newsletters mailed to parents and children. First parental newsletter of each annual series provided general information about skin cancer and its causes; second addressed personalized risk perception using tailored information about each child's specific risk factors, based on information at enrolment or skin exams; further newsletters addressed sun protection strategies for reducing children's risk and ways to overcome barriers (e.g. through testimonials conveying positive social norms and interactive features). Newsletters for children (included age-appropriate information and activities) were sent with parental newsletters but did not require parent involvement.</p>	<p>(1) Perceived melanoma risk NR (2) Perceived non-melanoma risk NR (3) Perceived melanoma severity NR (4) Perceived non-melanoma severity NR (5) Knowledge of risk factors for skin cancer (mean) Control: 9.13 (95% CI 9.02, 9.24); Intervention: 9.13 (9.02, 9.24) (6) Clothing (mean) Control: 2.30 (95% CI 2.23, 2.38), Intervention: 2.30 (2.23, 2.38) (7) Hats (mean) Control: 2.51 (95% CI 2.43, 2.59), Intervention: 2.51 (2.43, 2.59)</p>	<p>Average intervention effect from 2005-2007 (1) Perceived melanoma risk beta 0.03 (95% CI: -0.06, 0.12), p=0.54 (2) Perceived non-melanoma risk beta 0.04 (95% CI: -0.06, 0.15), p=0.45 (3) Perceived melanoma severity. beta -0.04 (95% CI: -0.10, 0.02), p=0.18 (4) Perceived non-melanoma severity. beta 0.01 (95% CI: 0.06, 0.07), p=0.86 (5) Knowledge of risk factors for skin cancer beta 0.42 (95% CI 0.28, 0.57), p<0.001 (6) Clothing beta 0.14 (95% CI 0.03, 0.26), p=0.01 (7) Hats</p>	<p>There were no group differences in parents' perceptions of their child's risk for melanoma or non-melanoma skin cancer or in the perceived severity of either form of skin cancer. Compared to the control group, participants in the intervention group were more aware of skin cancer risk factors. Effect size (percentage of variance explained by the intervention, R²) was 5% for risk factor awareness. Relative to baseline, the intervention group reported higher frequency of using long clothing, hats, shade, sunscreen, midday sun avoidance, and all behaviours combined averaged across the 2005–2007 follow-up period, compared to the control group. In general, group differences were small in magnitude and not consistent across years. Only sunscreen use and the composite measure showed significant group differences in all years of the study compared to baseline. There were no intervention effects on child tanning and</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
	<p>the chance getting skin cancer. Number of correct answers was assessed.</p> <p>(6) Clothing. Parents were asked to report frequency with which child wears clothes covering most of the arms and legs on sunny days during the current summer when child is outside for 15 minutes or longer between 11:00AM and 3:00PM. Responses were recorded on a 5-point Likert-type scale (1 never; 2 not very often; 3 about half the time; 4 most of the time; 5 all of the time).</p> <p>(7) Hats. Parents were asked to report frequency of child's hat wearing given same circumstances as (6). Responses were recorded on a 5-point Likert-type scale as (6).</p> <p>(8) Shade. Parents were asked to report frequency with which the child stays in the shade given same circumstances as (6). Responses were recorded on a 5-point Likert-type scale as (6).</p> <p>(9) Sunscreen. Parents were asked to report frequency with which the child uses sunscreen given same circumstances as (6). Responses were recorded on a 5-point Likert-type scale as (6).</p> <p>(10) Midday sun avoidance.</p>		<p>All participants who attended skin exams during a given summer received a letter telling them the nevus count for their child and the average for children examined that year.</p> <p>Control group A letter each spring invited participants to complete data collection. All participants who attended skin exams during a given summer received a letter telling them the nevus count for their child and the average for children examined that year.</p>	<p>(8) Shade (mean) Control: mean 2.76 (95% CI 2.71, 2.81), Intervention 2.76 (2.71, 2.81)</p> <p>(9) Sunscreen (mean) Control: 4.18 (95% CI 4.11, 4.25), Intervention 4.18 (4.11, 4.25)</p> <p>(10) Midday sun avoidance Control: 3.90 (95% CI 3.81, 3.99), Intervention 3.90 (3.81, 3.99)</p> <p>(11) Sun protection composite Control: 15.63 (95% CI 15.43, 15.83), Intervention 15.63 (15.43, 15.83)</p> <p>(12) Naevi count (<2mm) (geometric mean) Control: 18.25 (95% CI 17.32, 19.22); Intervention: 18.25 (17.32, 19.22)</p> <p>(13) Naevi count (>2mm) (odds)</p>	<p>beta 0.12 (95% CI 0.02, 0.22), p=0.02</p> <p>(8) Shade beta 0.12 (95% CI 0.04, 0.20), p=0.002</p> <p>(9) Sunscreen beta 0.16 (95% CI 0.07, 0.25), p<0.001</p> <p>(10) Midday sun avoidance beta 0.12 (95% CI 0.00, 0.23), p=0.04</p> <p>(11) Sun protection composite beta 0.69 (95% CI 0.43, 0.94), p<0.001</p> <p>(12) Naevi count (<2mm) (log naevus count <2mm): beta 0.02 (95% CI = 0.04, 0.08), p=0.52</p> <p>(13) Naevi count (>2mm) measured as per (12) (log odds of event occurring) beta = -0.25 (95% CI -0.53 to + 0.04), p=0.09</p> <p>(14) Tanning</p>	<p>counts of nevi 2 mm. For the presence of nevi 2 mm, there was a marginally significant average effect (p 0.09), with the intervention group having fewer large naevi in 2006 only. There were no intervention effects on child tanning. Averaged across follow-up, fewer non-severe sunburns were reported in the intervention group compared with the control group. Analysis of individual years shows that this effect was only significant for 2005. For severe sunburns, there was an effect only for 2007, with the intervention group reporting fewer severe sunburns.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
	<p>Parents were asked how many days per week the child is usually outside between 11:00AM and 3:00PM for more than 15 minutes during the current summer, and on those days, how long the child is outside. Responses were used to estimate weekly outside hours during midday (range 0–24). Scores were rescaled to 1–5 for consistency with the other four behavioural measures.</p> <p>(11) Sun protection composite measure was created: sum of scores on the five behaviour variables, with higher scores reflecting more-frequent sun protection behaviour.</p> <p>(12) Naevi count (<2mm) measured by skin examinations by a team of four to seven healthcare providers. The entire body (except scalp, genitals, and buttocks) was examined for naevi.</p> <p>(13) Naevi count (>2mm) measured as per (12).</p> <p>(14) Tanning, measured using a Chroma Meter CR-400. Base skin colour was measured five times on the unexposed, upper inner arm, and degree of tanning was calculated as the difference in L-dimension values in this area and the exposed lateral forearm.</p>			<p>Control: 1.29 (95% CI 1.09, 1.52); Intervention: 1.29 (1.09, 1.52) (14) Tanning NR (15) Non-severe sunburn (odds) Control: 0.82 (95% CI 0.70, 0.96), Intervention: 0.82 (0.70, 0.96) (16) Severe Sunburn (odds) Control : 0.01 (95% CI 0.01, 0.03), intervention 0.01 (0.01, 0.03)</p>	<p>beta 0.13 (95% CI 0.17, 0.44), p=0.39 (15) Non-severe sunburn log odds non-severe sunburn occurring = -0.25 (95% CI = -0.47 to -0.04), p=0.02 (16) Severe Sunburn log odds severe sunburn occurring -0.52 (95% CI -1.23 to +0.19), p=0.15</p>	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
	<p>(15) Non-severe sunburn. Parents were asked whether their child had any severe sunburns (defined as blistering) or other sunburns each year. Because of low frequency, both measures were dichotomized as none versus any.</p> <p>(16) Severe sunburn. Parents were asked whether their child had any severe sunburns (defined as blistering) or other sunburns each year. Because of low frequency, both measures were dichotomized as none versus any.</p>					

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Results	Comments
Devine (2008) (102) Design Pre- to post- intervention using questionnaires Country Australia Quality Moderate [+]	Objectives Evaluation of an educational intervention addressing risky beliefs held by midwives and nurses working in maternity areas and new mothers about therapeutic sun exposure. To evaluate whether the intervention would increase midwives' and nurses' knowledge and confidence in talking to mothers about sunlight exposure. Outcomes and outcome measurement Inappropriate beliefs about therapeutic sun exposure during the post-partum period and infancy measured by a questionnaire.	Midwives and nurses. Sample size 59 staff participated in the educational intervention. 48 (81.5%) attended in-service workshops. 11 (18.5%) received the individual one-to-one educational session. 39 included post intervention (returned a completed workshop evaluation form), and 42 at follow up. 59.5% were midwives, 37% were registered general nurses and 3.5% were enrolled nurses. Age NR Gender Not reported Ethnicity Not reported	Intervention A 1 h workshop (or a one-on- one educational session for those who could not attend the workshop) and distribution of an accompanying resource package, entitled "The Myths and Facts of Therapeutic Sun Exposure." A total of seven inservice workshops and eleven individual educational sessions were conducted over a one-month period (19 February -19 March 2003). Comparators One hospital was assigned to the intervention group, and the other two hospitals were assigned to the control group.	86.8% response "The in-service has increased my knowledge of the topic": 56.4% strongly agree and the remainder agree.	The educational intervention was successful in developing the knowledge of midwives and nurses to provide sound advice to new mothers about therapeutic sun exposure.

Study details	Objectives and outcomes	Participants	Study methods	Baseline	Results
<p>Dixon (2008) (122)</p> <p>Design Serial cross-sectional observational field surveys.</p> <p>Country Australia</p> <p>Quality Moderate [+]</p>	<p>Objectives To describe the prevalence and determinants of teenagers' and adults' observed sun protection behaviour while engaged in outdoor leisure activities on summer weekends, over a decade of the SunSmart skin cancer prevention programme.</p> <p>Outcomes and outcome measurement Clothing cover measured by clothes cover index representing persons above or below the median level of body cover for each type of leisure setting. The index was based on the proportion of body surface covered by the type of hat, shirt, and leg cover garments worn.</p>	<p>Teenagers and adults.</p> <p>Sample size 46,810 observations.</p> <p>Age (years) 14 +</p> <p>Gender (female) 38%</p> <p>Ethnicity NR</p>	<p>SunSmart skin cancer prevention programme, which involved public education and advocacy.</p> <p>Targeted people who seemed to be 14 years or older, at leisure at parks, gardens, golf courses, tennis courts, pools, or beaches located within a 25-km radius of Melbourne city centre.</p>	<p>Median level of clothing cover: Parks and gardens: 74.1%; Golf courses: 83.0%; Tennis courts: 64.9%; Pools and beaches: 50.9%.</p>	<p>Over the years, the odds of having clothes cover above the median increased for people at parks and gardens (OR 1.04; 95% CI: 1.02-1.04), tennis courts (OR 1.12; 95% CI, 1.11-1.14), and pools and beaches (OR, 1.03; 95% CI, 1.03-1.05), but decreased by 5% per year for people at golf courses (OR, 0.95; 95% CI, 0.93-0.96).</p> <p>Significant improvements in the extent of body cover occurred over the decade, such that the odds of the proportion of people wearing clothes cover above the median level increased by 3% per year (95% CI: 2-4%).</p>

Study details	Objectives and outcomes	Participants	Study methods	Baseline	Results	Comments
<p>Dobbins (2008) (103)</p> <p>Design Cross-sectional telephone interviews</p> <p>Country Australia</p> <p>Quality Moderate [+]</p>	<p>Objectives To examine trends over time in sun-protective behaviours of residents of Melbourne, Australia, and the effect of SunSmart-paid television media on skin cancer prevention attitudes and behaviours in the context of a long-term health promotion programme. The study aimed to evaluate whether outcomes were associated with extent of SunSmart television advertising</p> <p>Outcomes and outcome measurement (1) Tan preference: "Do you like to get a suntan, or not?" and "How deep a suntan do you like to get?". Response categories: light, moderate, dark, or very dark tan. (2) Hat, sunscreen use with SPF >12, long sleeved top, long leg trousers, time outdoors, body exposure. "Thinking back to Sunday, were you outdoors for longer than 15 minutes between 11 AM and 3 PM? By outdoors we mean not in a building and not in a covered vehicle." And "What activity were you doing mostly during that time out of doors?" and "About how much time did you spend out of doors on Sunday between 11 AM and 3 PM?" Would you mind telling me what you were wearing while you were (doing this activity)?" and "Were you wearing a cap, hat, or sun visor?" If the respondent wore a hat or cap, they were asked: "Did your hat/cap have a wide brim or a narrow brim?" and "Did it have a flap that covered the back of your neck?" Questions were asked about sunscreen application during the activity. These questions included: "A sunscreen is a gel, lotion, or cream that filters out ultraviolet sunlight to prevent burning and other skin damage. Did you use a sunscreen between 11 AM and 3 PM on Sunday?" "What was the sun protection factor of the sunscreen you used?" "On what parts of the body did you apply sunscreen? Where else? Anywhere else?" "Were there any areas exposed to the sun that didn't have sunscreen on them?" Sunburn "Did you get at all sunburned yesterday? What about on Saturday?" The responses were recorded as being sunburned or not on the Sunday and/or Saturday, or neither day.</p>	<p>Teenagers and adults</p> <p>Sample size 11,589</p> <p>Age (years) 14 to 69.</p> <p>Gender NR.</p> <p>Ethnicity NR.</p>	<p>Intervention SunSmart television advertising. This was a skin cancer prevention programme, which involved public education and advocacy. One person per household was interviewed Gender quotas were used during recruitment to ensure consistency in the sample demographics.</p>	<p>1987-1988 (1) No=41.9% (2) Hat used 20.5%; Sunscreen used (>SPF 12) 12.1%; 3/4 or long sleeved top worn 16.3%; 3/4 or long leg cover worn 54.1%; Time outdoors 127.8 minutes; Body Exposure Index (0 full protection, 1 all skin unprotected) 0.27 Sunburned: 11.5</p>	<p>2001-2002 (2) No =59.3% (improvement among respondents' tan preference, p<0.001) (2) Hat used 38.9%, (p<0.001); Sunscreen used (>SPF 12) 27%, (p<0.001); 3/4 or long sleeved top worn 27.4%, (p<0.001); 3/4 or long leg cover worn 65.8, (p<0.001); Time outdoors 122.7 minutes (NS); Body Exposure Index (0 full protection, 1 all skin unprotected) 0.19 (p<0.001); Sunburned: 9.1% (p<0.001)</p>	<p>Use of hats and sunscreens significantly increased over time and peaked during the mid to late 1990s, compared with the pre-SunSmart baseline. The mean proportion of unprotected skin was reduced and was lowest in the summer of 1997–1998.</p>

Study details	Objectives and outcomes	Study methods	Results
<p>Dono (2014) (116)</p> <p>Design Online survey</p> <p>Country Australia</p> <p>Quality Moderate [+]</p>	<p>Objectives To assess the relationship between the existence and comprehensiveness of written policies and the comprehensiveness of sun protection practices. The impact of school demographics on the strength of the relationship. Does 'SunSmart' membership impact on practices, beyond having any formal policy.</p> <p>Outcomes and outcome measurement Sun protection practices measured by a sun protection practice score created for each school based on the number of practices that were undertaken at that school. Higher scores indicated greater practice comprehensiveness.</p>	<p>Participants Primary school principals</p> <p>Sample size 1573 schools.</p> <p>Recruitment methods Of the 7644 eligible schools, either 15% or 150 schools (whichever yielded the larger sample size) from each Australian State or Territory were selected to ensure that there was adequate representation from each State/Territory. Principals from all sampled schools were sent an email during September/October 2011 inviting them to complete an online survey</p>	<p>Mean practice comprehensiveness score was 20.32 (SD=3.86, range: 5–30). Over 95% of schools reporting practices relating to hat use, eating lunch indoors or in the shade and providing sun protection information to parents. SunSmart status, controlling for school demographics, was associated with the practice comprehensiveness (beta = 0.13, P<0.01). Schools with a written policy had more comprehensive practices than schools without a written policy. SunSmart membership was indirectly related to practice comprehensiveness via policy comprehensiveness.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
Dubas 2012 (63) Design RCT Country USA Quality Poor [-]	Objectives To explore the effect of sunscreen availability on its application among outdoor collegiate athletes. Outcomes and outcome measurement (1) Self-reported sunscreen use - initial application. (2) Self reported sunscreen use - reapplication during practice. (3) Self reported sunscreen use - re-application during competition.	Adult females at college on golf teams Sample size 83 Age (mean years, SD) Intervention: 19.34 (1.24) Control: 19.74 (0.99), (p=0.17) Gender (female) 100% Ethnicity NR	Intervention Completed surveys for the month and given 5 tubes of SPF 30+ sunscreen. Participants received one photo (head shot) of an older, naturally fair-skinned model (pale-target condition) and a similar photo where the model had been computer-morphed to look more tanned (tan-target condition). Each team received one (1-gallon) tub of SPF 30+ sunscreen lotion which was placed at the entrance to the team's locker room. Written and verbal directions informed players to use the locker room tub of sunscreen daily and to keep at least one tube of sunscreen in their golf bag at all times Comparator Participants only completed surveys.	Self-reported sunscreen use, initial application Intervention: 3.05 (2.00). Control: 3.10 (2.04). Sunscreen use - reapplication during practice Intervention 12/44 (27%). Control 12/39 (31%). Sunscreen use - reapplication during competition Intervention: 20/44 (45%) Control: 21/39 (54%).	Self-reported sunscreen use, initial application Intervention: 3.80 (2.26), p=0.01. Control: 2.69 (1.69). After adjusting for sunscreen use before the study, a linear regression model demonstrated that making sunscreen available in the locker room accounted for an increase of 1.13 more days per week of sunscreen use (p = 0.008). Sunscreen use - reapplication during practice Intervention: 9/44 (20%) (NS). Control: 11/39 (28%) (NS). Sunscreen use - reapplication during competition Intervention: 28/44 (64%) (NS). Control: 20/39 (51%) (NS). Players with ready access to sunscreen during competition increased their reapplication by 20%, although this did not reach statistical significance (P =0.10). Control group participants' sunscreen reapplication remained virtually unchanged.

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Results	Comments
<p>Dykstra (2008) (27)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality Moderate [-]</p>	<p>Objectives Does the induction of cognitive dissonance and reactance (differentially) impact the effectiveness of a persuasive message in determining attitude change as a result of a UV intervention?</p> <p>Outcomes and outcome measurement (1) Perceived vulnerability to negative consequences related to UV exposure. Questionnaire assessed vulnerability using 3 items (7-point scale: no chance to definitely would happen); vulnerability as a result of using tanning booth (3 items, 7-point scale); three additional items for perceived vulnerability (5-point scale: strongly disagree to strongly agree) (2) Behavioural willingness to sunbathe measured by 3 scenarios with 9 behaviours in total. Willingness to engage in behaviour rated on a 7-point scale (1= not at all; 7 = very). (3) Intention to sunbathe measured by question: "How likely are you to spend some time in the sun to get some colour (sunbathe) in the next 6 months?" Rated from 1 (definitely not) to 7 (definitely will). (4) Intentions to protect oneself from UV damage by using sunscreen was measured using 10 items, each rated on a 5-point scale (strongly disagree to strongly agree). Responses averaged to create an intention to protect index. (5) Intentions to allow one's child to be exposed in the next 6 months measured by question: "How likely are you to: allow my child/children to spend time in the sun to get some colour (sunbathe)". Rated</p>	<p>Mothers of elementary and middle school children</p> <p>Sample size 151 analysed</p> <p>Age (years) 43.1</p> <p>Gender (female) 100%</p> <p>Ethnicity White: 96% Other: 4%</p>	<p>Different approaches to administering a multi-component UV intervention, each with or without a UV photo. Intervention also included a colourful information card on both skin cancer and photoaging, a brochure giving information on UV exposure, and single-use sunscreen samples.</p> <p>Interventions Forceful persuasion (designed to arouse reactance), and Subtle persuasion (designed to induce dissonance).</p> <p>Control Information only (no persuasion), The intervention components were identical for all participants, except for the photos: participants either saw only black and white photo or both a black and white photo and a photo revealing UV skin damage not visible to the naked eye.</p>	<p>Behavioural willingness to sunbathe <i>No UV photo</i> No P: 3.95 (0.27); SP: 4.08 (0.27); FP: 4.57 (0.25) <i>UV photo</i> No P: 4.69 (0.27); SP: 4.18 (0.27); FP: 4.25 (0.28) Intention to sunbathe <i>No UV photo</i> No P: 2.77 (0.35); SP: 2.65 (0.35); FP: 2.80 (0.32) <i>UV photo</i> No P: 3.14 (0.34); SP: 2.40 (0.35); FP: 3.16 (0.36) F(2, 139) = 1.07, p >0.35 Intentions to protect oneself from UV damage by using sunscreen <i>No UV photo</i> No P: 3.90 (0.11); SP: 4.00 (0.10); FP: 3.86 (0.10) <i>UV photo</i> No P: 3.86 (0.10); SP: 4.10 (0.10); FP: 4.35 (0.11) F(2, 139) = 2.55, p <0.09 Intentions to allow ones child to be exposed in the next 6 months <i>No UV photo</i> No P: 1.94 (0.27); SP: 1.73</p>	<p>No significant difference by UV photo/no UV photo or by persuasion condition. Persuasion condition was not a significant predictor of willingness or intention to sunbathe, nor of intention to protect..</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Results	Comments
	<p>from 1 (definitely not) to 7 (definitely will). (6) Intentions to protect one's child/children from UV exposure in the next six months were measured by two questions relating to insisting child uses sunscreen. Responses rated from 1 (definitely not) to 7 (definitely will) and averaged to form a child protection index. (7) Willingness to let the child receive UV exposure was measured by 8 willingness items, each rated on a 7-point scale (1 = not at all; 7 = very). Averaged to give willingness index for each scenario, such that high scores indicated more willingness to let the child receive UV exposure.</p>			<p>(0.26); FP: 1.41 (0.24) <i>UV photo</i> No P: 1.85 (0.26); SP: 2.19 (0.27); FP: 1.76 (0.27) <u>Intentions to protect ones child/children from UV exposure in the next six months</u> <i>No UV photo</i> No P: 5.68 (0.27); SP: 5.51 (0.26); FP: 4.91 (0.24) <i>UV photo</i> No P: 4.80 (0.26); SP: 5.09 (0.27); FP: 6.08 (0.27) <u>Willingness to let the child receive UV exposure</u> <i>No UV photo</i> No P: 2.11 (0.16); SP: 1.97 (0.16); FP: 2.07 (0.15) <i>UV photo</i> No P: 2.49 (0.16); SP: 1.95 (0.16); FP: 1.87 (0.16)</p>	

Study details	Objectives and outcomes	Participants	Systematic review methods	Results	Comments
<p>Eagle (2009) (34) Design Systematic Review. Country Australia, Canada, France, Germany, Ireland, Italy, the Netherlands, Spain, Sweden, UK, and the USA. Quality Moderate [+]</p>	<p>Objectives To assess the effective and cost effective ways of providing information on skin cancer prevention to change people's knowledge, awareness and behaviour. To investigate what content effective and cost effective primary prevention messages contain and what is the most effective and cost effective content. Outcomes and outcome measurement (1) Perception of skin cancer and self-efficacy measured in various ways e.g. change in views through questionnaire and other methods. (2). Self-reported knowledge of skin cancer risk, tanning risk. (3) Sun-protection knowledge variously measured. (4) Change in knowledge of sun-protection strategies/ behaviours evaluated through self-report, direct observation, questionnaire and other methods (5) Skin lesions measured in various ways. Number of suspicious lesions excised over time</p>	<p>Varied participants Sample size Included studies: 84 Included participants: NR</p>	<p>Searches conducted from inception to Aug/Sep 2008, Interventions reviewed Verbal advice. Mass media. Mixed methods (lecture + supporting visual material; video + printed material; verbal advice + website; verbal advice + supporting visual/printed material; lesson-based including verbal advice, videos and printed material). New media (the Internet, (including social networking sites), e-media and text messaging). Printed material. Verbal advice Mass media Mixed methods (lecture + supporting visual material; video + printed material; verbal advice + website; verbal advice + supporting visual/printed material; lesson-based including verbal advice, videos and printed material) New media (the Internet (including social networking sites), e-media and text messaging) Printed material Comparators Current information</p>	<p>University students (15 RCTs, 1 CBA, 2 B&A studies); Mixed results. Increased perceived susceptibility/vulnerability to skin cancer and self-efficacy (3 studies) and significant improvements in risk perceptions (2 studies). Mixed results; four studies reported increases in knowledge of risk of skin cancer or tanning, three of which were statistically significant (print material). (mass media, mixed methods, new media, print material): mixed results; four studies reported significant improvements in sun protection knowledge; two studies study found a significant decrease from post-intervention knowledge after 10-week and 1-yr follow-up 15RCTs, 1 cost-benefit analysis and 2 before and after studies (mass media, mixed methods, new media, print material); mixed results; three studies reported significant improvements in self-reported sun protection behaviour; none of the studies investigated actual sustained behaviour change. Secondary schoolchildren: 4 RCTs and 3 B&A studies_(mixed methods); all reported significant increases in self-reported knowledge of skin cancer</p>	<p>Very few studies provided sufficient detail of the content of the intervention, or were not designed to enable comparison of different components or content. Thus it was not therefore possible to determine what content or component of the intervention was the most effective. General conclusions: A number of studies suggested evidence of effectiveness on knowledge-related outcomes - it was not possible to determine what content or component of the intervention was the most effective. The report provides a synthesis of findings from the original WHMTAC report (Feb and May 2009) (61studies) and an analysis of before-and - after studies (n=23) identified but not included in the original report. Also brief summary of major supplementary and compounding factors drawn from the extant</p>

			<p>provision, 'do nothing', or any of the listed interventions.</p> <p>Comparators specified in the original WMHTAC report were current information provision, do nothing, or any of the listed interventions.</p>	<p>risk/symptoms at follow-up (1 week – 5 months).</p> <p>one before and after study using mixed method delivery found no significant difference in reported use of sunscreen, hats or sunglasses at 5 month follow up.</p> <p><u>Workplace setting: 1 RCT</u> (print media + info on self-examination) found significant increase in self-reported knowledge of skin cancer risk with male employees of a mining company at 10 and 20 week follow-up.</p> <p>4 RCTs (mixed methods, new media, print material, unspecified); some evidence of increased sun protection knowledge. Little evidence of positive changes relating to actual sun protection behaviours.</p> <p><u>Primary/Secondary schoolchildren:</u> A mixed method delivery using group verbal advice plus the use of a SunWise website increased self-reported knowledge of sun protection strategies at baseline, 6 and 12 months post intervention among children aged 5-15 from some (not all) participating schools.</p> <p><u>Primary schoolchildren:</u> 10 RCTs, 5 CBAs and 10 B&A studies (new media, lesson-based delivery, health fair, mixed methods); mixed results; several</p>	<p>literature and the authors' recent publications.</p> <p>Very few studies demonstrated effectiveness relating to sun protection or skin cancer prevention behaviours.</p>
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				<p>studies reported higher knowledge of sun protection behaviours; inadequate reporting of intervention delivery made it impossible to determine effects of individual delivery strategies/ components. (new media, lesson-based delivery, health fair, mixed methods): little evidence of actual behaviour change; inadequate reporting of intervention delivery made it impossible to determine effects of individual delivery strategies/ components.</p> <p><u>Home/Recreational:</u> 13 RCTs, 1 CBA and 3B&A studies (mixed methods, print material, lesson based); two studies using mixed methods reported significant improvements in sun protection knowledge; (mixed methods, print material, lesson based); one study using mixed methods reported significant improvement in self-reported sun protection behaviour (generalisability questioned since participants self-selected, white, well-educated and well-motivated) while another found short-term effects only in people responsible for supervising children at outdoor venues; five studies of various home-delivered print material showed some evidence of improved self-reported sun protection behaviour; three studies found no significant effects post-</p>	
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				<p>intervention.</p> <p><u>Medical/ Hospital:</u> 3 RCTs, 2 CBA and 3 B&A studies (new media, print material, mixed methods; mixed results, with some increase found with computer-based intervention but little impact of print material. mixed results, with some increase found with computer-based intervention but little impact of print material; several studies did not directly measure sun protection behaviour.</p> <p><u>Mass Consumer Media:</u> one before and after study (brochures, news conferences, interviews, public service announcements and promotional activity at a baseball game, targeted at adults) reported significant impact on self-reported actions to reduce risk of skin cancer among those remembering communications.</p> <p>(television advertising to the general population (all adults) reported a significant increase in excised lesions during the campaign period.</p>	
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Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Eisman 2013 (106)</p> <p>Design RCT</p> <p>Country Spain</p> <p>Quality Poor [-]</p>	<p>Objectives To determine the knowledge and behaviour of a Spanish adolescent population in relation to sun exposure through an Internet-based system, and to describe the use of an Internet-based school intervention programme to improve sun exposure knowledge and behaviour of adolescents.</p> <p>Outcomes and outcome measurement (1) Level of knowledge of the effects of sun exposure. Participants were asked whether there was a relationship between skin cancer and sun exposure, whether the sun exerted an influence on nevi, whether they had read anything on the ozone layer, whether they had received any information on sun protection, and whether people with low phototypes (light skin and eyes) were more prone to tanning. Their overall view of sun exposure was assessed by asking whether they believed sunbathing to be healthy or dangerous and what they considered the best times for sun exposure. (2) Self reported sun protection measures</p>	<p>Secondary school children.</p> <p>Sample size Intervention: 7 centres, 730 pupils; Control group: 5 centres, 560 pupils.</p> <p>Age (years) 12 to 16</p> <p>Gender (female) Intervention: 62.2% Comparator: 49%</p> <p>Ethnicity Not reported</p>	<p>Intervention Pupils accessed a website for at least 1 h in the presence of their teachers at the end of the school year (June), and could access the webpage throughout the summer. The webpage was structured in six sections by the Study Committee (dermatologists, epidemiologists and specialists in education): (i) the sun and its characteristics; (ii) sun without danger; (iii) seven sun commandments; (iv) games; (v) visits to other websites and (vi) Who are we?</p>	<p>Baseline Knowledge score (Mean (SE)) Control: 5.39 (0.082); Intervention: 5.25 (0.163), (p=0.493)</p> <p>Sun protection measures Control 73.4% (2.1) Intervention 70.8% (1.8), p=0.378.</p> <p>Protection measures when cloudy Control 39% (SE 1.9); Intervention 40% (2.3), p=0.755.</p> <p>Use of suncream, Never: Control 11.8% (SE 1.7); Intervention 12.5% (1.5). Almost never or sometimes: Control 62.9% (2.0); Intervention 60.9% (2.1). Almost always or always: Control 25.3% (1.9); Intervention</p>	<p>Results Knowledge score Adjusted OR for high or excellent knowledge score compared to reference category (1 = null, low or medium); intervention compared with control group: OR 0.515 (95%CI: 0.156–1.699), p=0.240 (not significant). There was no improvement in sun exposure timetable or knowledge.</p> <p>Sun protection measures OR 0.949 (0.603–1.463), p=0.757, NS</p> <p>Protection measures when cloudy OR 1.318 (1.084–2.053), p=0.041</p> <p>Use of suncream OR 1.123 (1.043–2.404), p=0.045 Never = 1; Almost never or sometimes OR 0.787 (0.399–1.553); Almost always or always 1.498 (1.297–2.435), p=0.05</p> <p>Frequency of suncream application Not known = 1; 20: OR=0.805 (0.286–2.271); 40: OR=1.073 (0.499–2.309), p=0.619 NS. Never = 1; Once a day 1.054 (0.552–2.012); Every 6 hours 0.980 (0.349–2.756); Every 2 hours 1.311 (1.169–3.804), p=0.039</p> <p>Number of physical protection measures: 0 or 1: 1; 2 or 3: OR=1.237 (0.506–3.022); 4: OR=2.457 (1.784–7.707), p=0.0297</p> <p>Sunburn Control: 43.8% (SE = 1.3) in inland schools and 52.8% (SE = 2.7) in coastal schools,</p>	<p>Significant improvement in the self-reported use of four physical measures (OR 2.45, 95% CI 1.78–7.70), use of sun cream (OR 1.12, 95% CI 1.04–2.40), frequency of sun cream application every 2 h (OR 1.31, 95% CI 1.16–3.80) and use of protection on cloudy days (OR 1.31, 95% CI 1.08–2.05). Control group, sunburn rates decreased slightly to 43.8% (SE = 1.3) in inland schools and to 52.8% (SE = 2.7) in coastal schools, NS (P = 0.14) Intervention: rate of sunburning decreased to 19% (SE = 4.3%) in the inland schools and to 44.8% (SE = 3.4%) in the coastal schools (P = 0.003). After adjusting for sex and inland or coastal location of the centre the OR = 0.45, 95% CI = 0.23 to 0.87, (p = 0.018)</p>

Study details	Objectives and outcomes	Participants	Intervention/ Comparator	Baseline	Results	Comments
	<p>(3) Self reported protection measures when cloudy.</p> <p>(4) Self reported use of sun cream.</p> <p>(5) Self reported protection factor-</p> <p>(6) Self reported frequency of sun cream application</p> <p>(7) Self reported number of physical measures to protect from sun (T-shirt, cap/hat, sunglasses, shade) used always or almost always</p> <p>(8) Rate of self-reported sunburning.</p> <p>(9) Self reported frequency of sunbathing between mid-day and 6 pm.t</p>		<p><u>Comparators</u></p> <p>No intervention.</p>	<p>26.7% (2.5).</p> <p><u>Frequency of suncream application</u></p> <p>Not reported</p> <p><u>Number of physical measures to protect from sun</u></p> <p>Not reported</p> <p><u>Sunburn rate</u></p> <p>Control: 46% (2.7); Intervention: 48% (4.4); 1 or 2: 47.4% (2.6), 43.1% (3.1); 3 or 4: 6.6% (1.4), 8.8% (2.3), p=0.551</p> <p><u>Frequency of sunbathing</u></p> <p>Inland schools: 53.4% (SE = 1.8), Coastal schools: 56.2% (SE = 1)</p>	<p>(P = 0.14).</p> <p>Intervention, 19% (SE = 4.3%) in the inland schools and 44.8% (SE = 3.4%) in the coastal schools (P = 0.003).</p> <p>After adjusting for sex and inland or coastal location of the centre OR = 0.45, 95% CI = 0.23to 0.87, P = 0.018)</p> <p><u>Frequency of sunbathing</u></p> <p>Almost always or always: OR=1; Almost never or sometimes: OR=0.909 (0.335–2.463); Never: OR= 0.317 (0.084–1.204), p=0.169</p> <p>NS</p>	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Emmons (2011) (14)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality [++]</p> <p>Methods reported in Emmons K M et al. The SunWise Policy intervention for school-based sun protection: a pilot study. J Sch Nurs 2008;24(4):215-221. (#2534)</p>	<p>Objectives Evaluation of 4 strategies for addressing skin cancer prevention in beach settings</p> <p>Outcomes and outcome measurement (1) Knowing what to look for when examining moles, measured by questionnaire (question not reported) (2) Self reported perceived level of skin cancer risk. (below, average, or above average). (3) Perceived level of skin damage. Measure not reported (4) Change in sun exposure and sun protection behaviours. Questionnaire: assessed in terms of behaviours when outside on a sunny day during the past month for at least 15 minutes from 10 AM to 4 PM (use of a wide-brimmed hat, regular use of sunscreen with SPF ≥ 15, limiting time in the sun; assessed with a 5-point scale ranging from never to always) (5) Sunburn measured by self-report.</p>	<p>Beach goers</p> <p>Sample size 593</p> <p>Age (median) 49 years</p> <p>Gender (female) 55%</p> <p>Ethnicity White</p>	<p>Intervention Education + biometric feedback + dermatologist skin exam (FDBK+DE)</p> <p>Comparators (1) Education + dermatologist skin exam (2) Education + biometric feedback (3) Education only</p>	<p>Know what to look for when examining moles somewhat/strongly agree: C: 38% B: 28% A: 32%</p> <p>Feedback & Derm Exam Group: 28%</p> <p>Self reported perceived level of skin cancer risk Higher than average perceived risk: C 24% B 34% A 23%</p> <p>FDBK+DE 23% Moderate/a lot perceived damage: C 50% B 52% A 52%</p> <p>FDBK+DE 63%</p> <p>Sun protection behaviours Wear hat (always/often): C:30% B: 29% A: 28%</p> <p>FDBK+DE: 34%</p> <p>Wear sunscreen</p>	<p>Know what to look for when examining moles C: 59%; B: 62% (OR=1.13); A: 61%; (OR = 1.19); FDBK+DE: 60%; (OR = 0.69); (Cond x time P<.0001; Time p<0.0001; Cond P = 0.0865)</p> <p>Know what to look for when examining moles Higher than average perceived risk: C: 20% B: 24% (OR=0.53) A: 21% (OR=1.20) FDBK+DE: 25% (OR=1.59) Moderate/a lot perceived damage: C: 48% B: 61% (OR = 1.55) A: 46% (OR NR) FDBK+DE: 67% (OR=1.89)</p> <p>Sun protection behaviours</p>	<p>There were intervention by time and time effects related to knowing what to look for when examining moles. Greatest improvement was in the feedback intervention, followed by the feedback plus Derm Exam intervention; the education only intervention had the least amount of improvement in knowledge about SSE. Perceived level of skin cancer risk: Significant interactions observed (p<0.0001 for intervention by time and p=0.0005 for time), with the greatest change in the feedback condition. There was a decrease in perceived risk in all but the feedback plus dermatology examination condition. There was an intervention effect for perceptions of having skin damage, but no time effect, suggesting that the interventions did not impact on perceptions of damage. There were significant differences in hat wearing by condition, with little change in the education only and Derm Exam conditions, and significant change in the feedback and the feedback</p>

				<p>(always/often) C: 38% B: 33% A: 30% FDBK+DE 42%</p> <p>Limit time in sun (past month) C: 29% B: 24% A: 25% FDBK+DE: 19%</p> <p>Skin self- examination (past month) C: 36% B: 29% A: 34% FDBK+DE: 28%</p> <p>Sunburn past month (0 or 1): C: 46%; B: 32%; A: 51%; FDBK+DE: 41%</p>	<p>Wear hat (always/often): C: 33% B: 42%; (OR=1.97) A: 31% (OR NR) FDBK+DE: 40%; (OR=1.43) (Cond X time P = .0321; Time P < .0001, Cond P = .0120)</p> <p>Wear sunscreen (always/often) C: 40% B: 48% (OR = 1.94) A: 42% (OR = 1.41) FDBK+DE: 53% (OR = 1.64) (Cond X time P = .0178; Time P < .0001; Cond P = .3859)</p> <p>Limit time in sun (past month) C: 30% B: 31% A: 28% FDBK+DE: 28% (Cond x time P = .4505; Time P = .0057; Cond P = .1716) Skin self- examination (past month)</p>	<p>plus Derm Exam conditions. There were condition by time and time effects related to sunscreen use, with the greatest increases in the feedback condition. There were no differences by condition in SSE at follow-up. Reduction of sunburns, with lowest levels of improvement in the education only and Derm Exam conditions, and the greatest improvements in the two feedback conditions (OR = 1.85). Even in the education only condition, although 46% (n = 63) of participants reported having none or one sunburn in the past month at baseline, that increased by 18 percentage points to 64% (n = 88) at follow-up (15% increase in Derm Exam group).</p>
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					C: 59% B: 60% A: 59% FDBK+DE: 63% (Cond x time P = .2913; Time P <.0001; Cond P = .8339) Sunburn past month (0 or 1): C: 64%; B: 55% (OR = 1.07); A: 66% (OR NR); FDBK+DE: 68%; (OR = 1.85); (Cond x time P = .0051; Time P < .0001; Cond P = .5122)	
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Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Falk (2011) (47) Design RCT Country Sweden Quality [-]</p> <p>This is the three year follow-up of Falk M & Anderson C. Prevention of skin cancer in primary healthcare: an evaluation of three different prevention effort levels and the applicability of phototest Eur J of General Practice 2008;14:68-75 {#2503}</p>	<p>Objectives To investigate, in primary health care, differentiated levels of prevention directed at skin cancer, and whether changes in sun habits/sun protection behaviour and attitudes towards sunbathing were affected, three years after intervention.</p> <p>To evaluate the impact of a phototest as a complementary tool for prevention.</p> <p>Outcomes and outcome measurement (1) Attitudes to the health risks of sunbathing (*question seems more perception-orientated) *Question: How extensive do you consider the health risks of sunbathing? (5-point Likert scale) (2) Attitudes to the health risks of skin cancer (*question seems more perception-orientated) *Question: How extensive do you consider the risk for you to develop skin cancer? (5-point Likert scale). (3) Perceived severity of skin cancer and photoaging risk messages. Participants indicated their agreement with the statement 'it would be terrible to develop skin cancer'. Response scale: Not at all (0) to Very much (10).</p>	<p>Adults registering at a health care centre Sample size 316 Age (years) 18 or over 18-15: 5% 26-40: 24% 41-64: 47% 65+: 24% Gender (female) 61% Ethnicity NR</p>	<p>Intervention Three intervention groups received the same general sun protection advice but different feedback based on questionnaire response: (1) Feedback by letter with standardized comments on skin type, sun habits, and sun protection, plus personalized risk assessment and sun protection advice, and information from Apoteket (Swedish public pharmacy). (2) Feedback by personal GP consultation (20 minutes) at the primary health care centre. Consisted of the same, feedback as on the questionnaire, plus adjusted information, sun protection advice and same folder from Apoteket. Nevi inspection was also performed. (3) Same feedback as group 2, but the GP consultation also</p>	<p>How extensive do you consider the health risks of sunbathing (mean score) Group 1: 2.76; Group 2: 2.81; Group 3: 2.73 How extensive do you consider the risk for you to develop skin cancer (mean) Group 1: 3.09; Group 2: 3.05; Group 3: 3.00 How do you like sunbathing? Group 1: 3.48; Group 2: 3.35; Group 3: 3.43. Do you thing the advantages of sunbathing outweigh the disadvantages? Group 1: 2.92; Group 2: 2.83; Group 3: 2.81 How important is it to you to get tanned in the summer? Group 1: 2.20; Group 2: 2.14; Group 3: 2.41</p>	<p>Mean change after 3 years How extensive do you consider the health risks of sunbathing Group 1: -0.06; Group 2: -0.33; Group 3: +0.05, NS How extensive do you consider the risk for you to develop skin cancer Group 1: -0.12; Group 2: -0.05; Group 3: 0.00, NS Agreement with statement it would be terrible to develop skin cancer Mean (SD) Low-self-affirmation alone:9.48 (1.22) / 8.68 (1.57) Low-self-affirmation + efficacy info:9.35 (1.38)/ 7.96 (1.95) High-self-affirmation alone: 9.19 (1.43) / 8.29</p>	<p>No statistically significant differences in outcome between groups could be demonstrated. Photoaging was perceived as less terrible than skin cancer. There were no other significant differences on this measure. No statistically significant differences in attitudes between groups could be demonstrated. Questions where the paired t-test showed significant change in attitude appeared most frequently in group 2. Only significant difference between groups was observed between groups 2 and 3 for staying in the shade (p<0.05). No statistically significant differences between the two subgroups could be demonstrated by ANCOVA. Significant group-dependent differences according to ANCOVA were only seen between groups 1 and 2, for q. 11 (p 0.05) and q. 13a (p 0.001), both measuring sunscreen use. Questions for which the paired t-test showed significantly lowered risk behaviour appeared most frequently in group 2, and were in all cases the same as when assessed by non-parametric analysis.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
	<p>(4) Attitude to sunbathing. question: How do you like sunbathing? (5-point Likert scale).</p> <p>(5) Attitude to advantages and disadvantages of sunbathing question: Do you think the advantages of sunbathing outweigh the disadvantages? (5-point Likert scale).</p> <p>(6) Attitudes to tanning question: How important is it for you to get tanned during the summer? (5-point Likert scale).</p> <p>(7) Behaviour/intention: stage of change related to giving up sunbathing. Questionnaire based on Transtheoretical Model of Behaviour Change (TMBC). Five stages of change, (1-5 (from maintenance to pre-contemplation)).</p> <p>(8) Behaviour/intention: stage of change related to using protective clothing. Questionnaire based on TMBC (as previous).</p> <p>(9) Behaviour/intention: stage of change related to using sunscreen. Questionnaire based on TMBC (as previous).</p> <p>(10) Behaviour/intention: stage of change related to staying in the shade. Questionnaire based on TMBC (as previous).</p> <p>(12) Sunburn: How many times</p>		<p>included a phototest. Participants reported the test result by mail, and feedback based on phototest result was mailed back.</p>	<p><u>Giving up sunbathing on TMBC</u> Group 1: 2.94; Group 2: 3.01; Group 3: 2.91</p> <p><u>Intention to use protective clothing on TMBC</u> Group 1: 2.41; Group 2: 3.72; Group 3: 2.40</p> <p><u>Intention to use sunscreen (TMBC)</u> Group 1: 3.31; Group 2: 3.42; Group 3: 3.23</p> <p><u>Intention to stay in shade (TMBC)</u> Group 1: 2.89; Group 2: 2.79; Group 3: 3.00</p> <p><u>How many times sunburned in past year</u> Group 1: 1.44; Group 2: 1.63; Group 3: 1.63</p> <p><u>How often do you sunbathe to tan</u> Group 1: 3.00; Group 2: 3.09; Group 3: 3.08</p>	<p>(1.99); High-self-affirmation + efficacy info: 9.40 (1.47) /8.50 (1.90)</p> <p><u>How do you like sunbathing?</u> Mean change after 3 years: Group 1: -0.10; Group 2: -0.14; Group 3: +0.04, (NS).</p> <p><u>Do you thing the advantages of sunbathing outweigh the disadvantages?</u> Mean change after 3 years: Group 1: -0.26; Group 2: -0.27; Group 3: -0.07, (NS)</p> <p><u>How important is it to you to get tanned in the summer?</u> Mean change after 3 years: Group 1: 0.04; Group 2: 0.02; Group 3: -0.15, not significant.</p> <p><u>Giving up sunbathing</u></p>	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
	<p>have you been sunburnt during the past year? 5 point Likert scale.</p> <p>(13) Sunbathing- How often do you sunbathe with the intention to tan during the summer in Sweden? (5-point Likert scale).</p> <p>(14) Sun vacation- How often do you usually go on a "sun vacation" abroad? (5 point Likert scale).</p> <p>(15) Sunbed use- How often do you use a sunbed?(5 point Likert scale).</p> <p>(16) Midday sun exposure- How long do you usually stay in the sun between 11 am and 3 pm (Jun–Aug)? (5 point Likert scale).</p> <p>(17) If you use sunscreens, which sun protection factor do you choose? (5 point Likert scale).</p> <p>(18) Use of long sleeved shirt/sweater. When in the sun, without intention to tan, how often do you use shirt or sweater with long sleeves? (5 point Likert scale).</p> <p>(19) Use of shade. When in the sun, without intention to tan, how often do you use staying in the shade to protect from the sun? (5 point Likert scale).</p> <p>(20) Sunscreen use. Do you usually use a sunscreen when sunbathing? (5 point Likert</p>			<p><u>How often do you go on a sun vacation abroad</u> Group 1: 1.88; Group 2: 1.90; Group 3: 1.86</p> <p><u>How often do you use a sunbed?</u> Group 1: 1.21; Group 2: 1.18; Group 3: 1.34</p> <p><u>How long do you usually stay in the sun between 11am and 3pm?</u> Group 1: 3.10; Group 2: 3.26; Group 3: 2.99</p> <p><u>Which SPF do you use?</u> Group 1: 3.01; Group 2: 3.06; Group 3: 3.12</p> <p><u>How often do you use shirt/top with long sleeves?</u> Group 1: 3.98; Group 2: 3.92; Group 3: 3.83</p> <p><u>How often do you stay in the shade?</u> Group 1: 3.03; Group 2: 2.89; Group 3: 3.10</p>	<p>(TMBC)</p> <p>Mean change after 3 years: Group 1: -0.40; Group 2: -0.60; Group 3: -0.53, not significant.</p> <p><u>Intention to use protective clothing on TMBC</u></p> <p>Mean change after 3 years: Group 1: -0.19; Group 2: -0.28; Group 3: -0.27, not significant</p> <p><u>Intention to use sunscreen (TMBC)</u></p> <p>Mean change after 3 years: Group 1: -0.09; Group 2: -0.29; Group 3: -0.14, not significant.</p> <p><u>Intention to stay in shade (TMBC)</u></p> <p>Mean change after 3 years: Group 1: -0.28; Group 2: -0.72; Group 3: -0.21, p <0.05 between groups 2 and 3.</p> <p><u>Intention to stay in shade (TMBC)</u></p>	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
	<p>scale).</p> <p>(21) When in the sun, without intention to tan, how often do you use sunscreens to protect from the sun? (5 point Likert scale).</p> <p>(22) Use of short sleeved shirt/sweater. When in the sun, without intention to tan, how often do you use shirt or sweater with short sleeves to protect from the sun? (5 point Likert scale).</p> <p>(23) When in the sun, without intention to tan, how often do you use sun hat or cap (5 point Likert scale).</p> <p>(23) Use of long trousers. When in the sun, without intention to tan, how often do you use trousers with long legs to protect from the sun? (5 point Likert scale).</p> <p>(24) Hat-wearing frequency = Usually/always</p> <p>(25) Sunscreen (SPF 30+) wearing frequency: Usually/always</p> <p>(26) Frequency of seeking shade = Usually/always</p> <p>(27) Frequency of deliberately wearing skimpy clothing = Usually/always</p>			<p><u>Do you usually use a sunscreen?</u> Group 1: 2.81; Group 2: 3.04; Group 3: 3.07</p> <p><u>How often do you use sunscreens when in the sun?</u> Group 1: 3.18; Group 2: 3.70; Group 3: 3.59</p> <p><u>How often do you use a short sleeved top when not intending to tan?</u> Group 1: 2.55; Group 2: 2.35; Group 3: 2.69</p> <p><u>When in sun how often do you use a hat?</u> Group 1: 3.48; Group 2: 3.06; Group 3: 3.17</p> <p><u>When in sun how often do you use long trousers?</u> Group 1: 3.80; Group 2: 3.89; Group 3: 3.67</p>	<p>Mean after three years: Group 1: -0.04; Group 2 -0.18; Group 3: -0.19, NS</p> <p><u>Intention to stay in shade (TMBC)</u> Mean change after three years: Group 1: -0.16; Group 2: -0.38; Group 3: -0.37, NS</p> <p><u>Intention to stay in shade (TMBC)</u> Mean after three years: Group 1: -0.02; Group 2: -0.09; Group 3: 0.00, NS</p> <p><u>How often do you use a sunbed?</u> Mean after three years: Group 1: -0.14; Group 2: -0.13; Group 3: -0.17, NS</p> <p><u>How long do you usually stay in the sun between 11am and 3pm?</u> Mean after three years: Group 1: -0.31;</p>	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
					<p>Group 2: -0.39; Group 3: -0.05 NS</p> <p><u>How long do you usually stay in the sun between 11am and 3pm?</u> Mean change at 3 years: Group 1: -0.30; Group 2: -0.57; Group 3: -0.38, NS</p> <p><u>How often do you use shirt/top with long sleeves?</u> Mean after three years: Group 1: -0.02; Group 2: -0.28; Group 3: -0.11, NS</p> <p><u>How often do you stay in the shade?</u> Mean after three years: Group 1: -0.15; Group 2: -0.29; Group 3: -0.19 - 0.17, NS</p> <p><u>Do you usually use a sunscreen?</u> Mean after three years: Group 1: 0.16;</p>	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
					<p>Group 2: -0.39; Group 3: -0.15, p <0.05 between group 1 and 2 <u>How often do you use sunscreens when in the sun?</u> Mean after three years: Group 1: 0.30; Group 2: -0.55; Group 3: -0.15, p <0.05 between group 1 and 2 <u>How often do you use a short sleeved top when not intending to tan?</u> Mean after three years: Group 1: -0.17; Group 2: 0.04; Group 3: -0.31, NS <u>How often do you use a short sleeved top when not intending to tan?</u> Mean after three years: Group 1: -0.03; Group 2: -0.19; Group 3: -0.06, NS <u>How often do you</u></p>	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
					<p>use a short sleeved top when <u>not intending to tan?</u> Mean after three years: Group 1: -0.24; Group 2: -0.35; Group 3: -0.25, NS <u>Hat wearing frequency – usually/always</u> OR 1.2, 95% CI 0.7–1.9, p=0.47 <u>Sunscreen use (SPF30+)</u> usually/always - OR 0.9, 95% CI 0.6–1.4, p=0.64 <u>Shade use – usually/always</u> OR 1.0, 95% CI 0.6–1.5, p=0.99 <u>Deliberately wearing skimpy clothes – always/usually</u> OR 1.0, 95% CI 0.6–1.6, p=0.85</p>	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
Study Geller (2006) (11) Design RCT Country USA Quality [++]	Objectives Does an intervention with siblings of recent melanoma patients improve the siblings' skin cancer risk reduction practices. Outcomes and outcome measurement Knowledge of nature and location of melanomas; Knowledge of risk factors for melanoma. Assessed the percentage of correct answers to a survey. Self-efficacy: confidence to self-examine, have a spouse/friend examine skin, see a dermatologist, wear sunscreen. Survey responses assessed using a 5-point Likert scale.	Siblings of melanoma patients, within 1 month of diagnosis Sample size 494 Age (years) 18 to over 51 (60% between the 18 and 50) Gender (female) 53% Ethnicity White	Intervention (1) an initial motivational and goal-setting telephone intervention session delivered by the health educator; (2) three sets of computer-generated materials specifically tailored to individual responses from the baseline survey; (3) three telephone counseling sessions with the health educator, timed to follow receipt of the mailed materials; and (4) linkages to free screening programmes. Control Usual care: physician's suggestion that patients diagnosed with melanoma notify their family members about their diagnosis and encourage the family members to be screened.	<u>Melanoma on face and arms:</u> Int: 52.4% Control: 59.4% <u>Melanoma round brown or black spot:</u> Int: 44.3% Control: 45.1% <u>Lots of moles increases risk of melanoma:</u> Int: 41.0% Control: 48.8% <u>Freckles increases risk of melanoma:</u> Int: 20.7% Control: 22% <u>Confidence to see dermatologist:</u> Int: 48.1% Control: 53.9%	6 month follow up: <u>Melanoma on face and arms:</u> Int: 63.1% Control: 59.4% (OR 1.90, 1.2 to 3.1) <u>Melanoma brown or black spot:</u> Int: 55.6% Control: 41.9%, (OR 2.1, 1.4 to 3.2) <u>Lots of moles increases risk of melanoma:</u> Int: 52.2% Control: 53.1% (NS) <u>Freckles increases risk of melanoma:</u> Int: 32.6% Control: 27.3% (NS) 12 months. <u>Confidence to see dermatologist:</u> Int: 61.2% Control: 53.3%, (OR 2.14 (1.2 to 3.7))	By the 6-month follow-up, IC participants had significantly greater improvements in knowledge regarding location and appearance of melanoma compared with control, controlling for skin type and intention to see a dermatologist. However, there were no differences in awareness that moles are risk factors for melanoma. Participants receiving personalized telephone counselling and individually tailored materials reported greater increases in confidence in seeing a dermatologist

Study details	Objectives and outcomes	Participants	Intervention	Baseline	Results
<p>Gilaberte (2008) (94)</p> <p>Design A non-randomised, before/after, community intervention without control group,</p> <p>Country Spain</p> <p>Quality [+]</p>	<p>Objectives To evaluate SolSano's effects on school children's knowledge, attitudes and practices about sun safety.</p> <p>Outcomes and outcome measurement Knowledge of when the sun is the most dangerous. Questionnaire administered before and after intervention Desire to be tanned: Questionnaire Clothes, hats, sunscreen, sunglasses, shade. Drawings - 1 point for each sun protection practice depicted; 2 drawings (range 0-10 points) Sun protection practice in outdoor activities. Use of SPF >15. Re-application of sunscreen measured by questionnaire.</p>	<p>Primary school children with schools as the unit of intervention</p> <p>Sample size 5845 children from 215 primary schools</p> <p>Age (mean years) 6.6</p> <p>Gender (female) 50.80%</p> <p>Ethnicity NR</p> <p>Other information: 1021 children (67.1%) lived in towns of more than 50,000 inhabitants and 501 (32.9%) attended rural schools; 5.8% had four skin cancer risk factors, 12.2% three, 24.4% two, and 31.2% one.</p>	<p>Intervention Using a 'Draw and Write research strategy' and a questionnaire.</p>	<p>Baseline <u>Knowledge of when sun is most dangerous</u> 49.9% correct <u>Desire to be tanned</u> 48.30% <u>Drawing scores</u> 1.69 +/- 1.71 <u>Sunscreen re-application:</u> Always 52.4%; Sometimes 26.1%; Never 19.6%. <u>Use SPF >15:</u> 42.4%. <u>Sun protection practice in outdoor activities:</u> Park 23.6%; Beach 82.1%; Sports 31.5%; Mountains 52.5% <u>Sunburn:</u> 35.80%.</p>	<p>Results <u>Knowledge of when sun is most dangerous</u> 72.50% (increased 22.6% (95% CI 19.5 to 25.8)) <u>Desire to be tanned</u> 43.80% (4.5% less) <u>Drawing scores</u> 2.72+1.45. (increase 1.03 (0.93, 1.13), p<0.001) <u>Sunscreen re-application</u> Always 55.6% (change +3.2% (0.3 to 6.3)); Sometimes 28.0% (change +1.9% (1.1 to 4.9)); Never 15.0% (change -4.6% (-7.2 to -2.0)). <u>Use SPF >15:</u> 62.7%. (increased 20.3% (17 to 23.6)). <u>Sun protection practice in outdoor activities:</u> Park 31.3%; (change 7.7% (4.6 to 10.7)) Beach 82.4% (change 0.3 (-2.4 to 3.0)); Sports 37.0% (change 5.5 (2.2 to</p>

Study details	Objectives and outcomes	Participants	Intervention	Baseline	Results
					8.8)); Mountains 57.4% (change 4.9 (1.5 to 8.3)). Sunburn: 23.50%.

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Glanz 2010 (73)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality [+]</p>	<p>Objectives To evaluate the impact of a mailed, tailored intervention on skin cancer prevention and skin self-examination behaviours of adults at moderate and high risk for skin cancer.</p> <p>Outcomes and outcome measurement Change in Sun protection behaviours measured with the: (1) Sun Habits Survey (2) 4-day Sun exposure diary (3) Skin self-examination frequency</p>	<p>Patients waiting in primary care clinic</p> <p>Sample size 724</p> <p>Age 41.7 (11.0)</p> <p>Gender(female) 77.5%</p> <p>Ethnicity White: 80.2%</p>	<p>Intervention Materials in 3 packages sent at 2-week intervals. Included: personalized risk feedback and recommendations, UV self-monitoring aids, skin self-examination instructions and practice tools, and skin cancer prevention and detection information.</p> <p>Comparators Single mailing sent with a standard sun safety booklet, a tip sheet on sunscreen use, and a bookmark encouraging skin self-examination.</p>	<p>Sun protection habits index: Intervention: 2.34 (0.03) Control: 2.34 (0.03)</p> <p>Skin self exam frequency Intervention: 0.39 (0.03); Control: 0.43 (0.03).</p>	<p>Sun protection habits index: Intervention: 2.57 (0.03) Control: 2.46 (0.03) The sun protection habits index showed a greater increase over time for participants in the intervention arm (effect size = 0.13); This effect was moderated by location. The intervention arm in both locations showed significant improvement, but the treatment effect was attenuated for Honolulu (effect size = 0.04; Long Island effect size = 0.23). Average sun protection habits (change from baseline): Intervention: 8.60 (1.31); Control: 1.85 (1.36) (p<0.001). Intervention group showed significant improvement on the sun protection habits composite over control (effect size = 0.39) Skin self exam frequency Intervention: 0.71 (0.03) Control: 0.61 (0.03) (p=0.004) Analysis for skin self-examination within the prior 3 months found a moderated effect, in which recent skin self-examination increased significantly more for the treatment group than for the control group for participants at higher risk for skin cancer (total effect size = 0.21; high-risk effect size = 0.39).</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
Glanz 2013 (72) Design RCT Country USA Quality [++]	Objectives To evaluate a tailored intervention hypothesized to help decrease children's skin cancer risk by reducing sun exposure, improving sun protection behaviours, and increasing parental skin examinations for children. Outcomes and outcome measurement Sun protection habits measured by the Sun Protection Habits Index (SPHI). Range of values: 1 (rarely) to 4 (always).	Grade 1 to 3 students at moderate or high risk for skin cancer. Sample size 1301 Age (years) 7.1 Gender (female) 49% Ethnicity White: 65.6%,	Intervention Tailored communication: multiple mailings with tailored skin cancer prevention materials. Participants received three packets, mailed 2 weeks apart, containing personalized risk feedback and recommendations. Control Participants received a single mailing: a standard skin cancer prevention and detection information brochure for children.	SPHI (Mean adjusted for location and risk group [SE]) Intervention: 2.19 (0.02); Control: 2.19 (0.02). Use sunscreen: Intervention: 3.06 (0.03). Control: 3.16 (0.03). Wear a shirt: Intervention: 2.33 (0.04); Control: 2.28 (0.04). Wear a hat: Intervention: 1.92 (0.04); Control: 1.97 (0.04). Stay in shade: Intervention: 1.98 (0.03); Control: 1.91 (0.03) . Wear sunglasses: Intervention: 1.66 (0.03); Control: 1.64 (0.03). Sun exposure between 10 and 4 (Range of values: 1 (1 or less) to 6 (6 hours per day)): Intervention: 3.41 (0.05); Control: 3.45 (0.05). Weekday sun exposure: Intervention: 3.11 (0.05); Control: 3.21 (0.05). Weekend sun exposure: Intervention: 3.71 (0.06); Control: 3.70 (0.05). Sunburns (Range of values: 1 (none) to 5 (5 or more sunburns)): Intervention: 1.61 (0.04); Control: 1.68 (0.04). Skin-examination (by parent) adjusted for location and risk group: Intervention: 0.60 (0.14);	SPHI (Mean adjusted for location and risk group [SE]) Intervention: 2.48 (0.02); Control: 2.34 (0.02) (p<.0001). Use sunscreen: Intervention: 3.33 (.03); Control: 3.24 (0.03) (p<.0001). Wear a shirt: Intervention: 2.60 (0.04); Control: 2.33 (0.04) (p<.001). Wear a hat: Intervention: 2.25 (0.04); Control: 2.13 (0.04) (p<.001). Stay in shade: Intervention: 2.33 (0.03); Control: 2.24 (0.03) p=.53. Wear sunglasses: Intervention: 1.88 (0.03); Control: 1.76 (0.03) (p=.03). Sun exposure between 10 and 4: Intervention: 2.98 (0.05); Control: 3.08 (0.05) (p=0.24). Weekday sun exposure: Intervention: 2.71 (0.05); Control: 2.80 (0.05) (p=0.81) Weekend sun exposure: Intervention: 3.26 (0.06); Control: 3.35 (0.05) (p=0.12) Sunburns: Intervention: 1.27 (0.04); Control: 1.37 (0.04) p=0.67. Skin-examination: Intervention: 0.87 (0.06); Control: 0.81 (0.06) (p=0.06). Sun Exposure Diary results; mean (SE) of change score adjusted for risk group and location: Average sun protection habits:

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
				Control: 0.57 (0.18).	<p>Intervention: 6.12 (0.72); Control: 0.80 (0.71) (p<.0001). <u>Any sun protection:</u> Intervention: 9.51 (1.78); Control: 0.79 (1.74) (p<.001). <u>Use sunscreen:</u> Intervention: 1.58 (1.85) Control: -0.15 (1.82) (p=.51). <u>Wear a shirt:</u> Intervention: 13.93 (1.85) Control: 2.21 (1.81) (p<.0001); <u>Wear a hat:</u> Intervention: 2.95 (1.16) Control: -1.96 (1.14) (p<.005); <u>Stay in shade:</u> Intervention: 6.01 (1.53) Control: 3.11 (1.50) (p=.18). <u>Sun exposure total</u> (Range of values: -7 to 7 hours i.e. Follow-Up Hours minus Baseline Hours): Intervention: -0.46 (0.07) Control: -0.36 (0.07) (p=.31); <u>Sun exposure weekdays</u> (Range of values: -7 to 7 hours i.e. Follow-Up Hours minus Baseline Hours) Intervention: -0.47 (0.10) Control: -0.32 (0.10) (p=.27). <u>Sun exposure weekends</u> (Range of values: -7 to 7 hours i.e. Follow-Up Hours minus Baseline Hours) Intervention: -0.44 (0.10) Control: -0.36 (0.10) (p=.59)</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Glasser 2010 (58)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality [+]</p>	<p>Objectives To assess the effect of a multicomponent intervention on parental knowledge, sun avoidance behaviours, and sun protection practices in children aged 3-10 years.</p> <p>Outcomes and outcome measurement Skin cancer knowledge. Questionnaire (details of items not reported). Five knowledge items assessed basic skin cancer facts. A knowledge composite score: 1 to correct responses for each item and zero to the incorrect or "don't know" response and summed participants' responses. Sun avoidance behaviour and sun protection practices. Parents reported whether (1) their child wore a shirt with sleeves most of the time, (2) whether the</p>	<p>English speaking parent-child pairs.</p> <p>Sample size 197 parent/ caregiver and child pairs.</p> <p>Age (years) Children: 3 -10; Parents: NR</p> <p>Gender (females) Children: 48.2%; Adults: 82.2%</p> <p>Ethnicity <u>White non-Latino</u>: Adults 49.2%; Children 44.7%; <u>Black, African-American</u>: Adults 11.7%; Children 11.1%; <u>Hispanic (Latino)</u>: Adults 28.9%; Children 27.4%; <u>Asian</u>: Adults 3.6%; Children 2%; <u>Mixed</u>: Adults 6.1%; Children 13.7%; <u>Missing</u>: Adults 0.5%; Children 1%</p>	<p>Intervention A brief presentation and brochure for the parent and educational video and sun protection incentives for the child. The brochure contained topics which included the epidemic of skin cancer, its relationship to the sun, and the importance of the 3 key sun protection practices (i.e. shirt, sunscreen, hat use a.k.a. Slip! Slop! Slap!).</p> <p>Control No intervention but plain t-shirt for child provided as a thank you for participating.</p>	<p>Baseline Skin cancer knowledge (out of 5) Intervention: 2.8 (1.3) Control: 2.4 (1.3). <u>Sun avoidance/sun protection</u> Intervention: (1) 37% (2) 41% (3) 7% Control: (1) 49% (2) 46%</p>	<p>Results Skin cancer knowledge (out of 5) Intervention: 3.6 (1.1) Control: 2.8 (1.2); <u>Sun avoidance/sun protection</u> Intervention: (1) 56% (19% difference, NS) (2) 70% (29% difference, p<0.05) (3) 28% (21% difference, p<0.05) Control: (1) 47% (-2% difference) (2) 50% (4% difference) (3) 11% (2% difference)</p>	<p>The analysis controlled for differences between the intervention and control groups. After controlling for covariates the intervention group had more significant increases in sun protection practice than the control group. But there was no significant difference in terms of sun avoidance behaviour.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
	child wore sunscreen most of the time and (3) whether the child's hat had at least 1 inch brim.					

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Gold (2011) (45)</p> <p>Design RCT</p> <p>Country Australia</p> <p>Quality [-]</p>	<p>Objectives To evaluate the effectiveness of messages related to safer sex and sun safety. To pilot the use of mobile advertising for health promotion.</p> <p>Outcomes and outcome measurement Attitude to tan via question: Preference for a dark tan (yes/no). Attitudes towards risk of skin cancer via question: Belief about risk of skin cancer (yes/no). Hat-wearing frequency: Usually/always Sunscreen (SPF 30+) wearing frequency: Usually/always Frequency of seeking shade: Usually/always Frequency of deliberately wearing skimpy clothing: Usually/always</p>	<p>Individuals subscribing to a mobile advertising service.</p> <p>Sample size 358 analysed</p> <p>Age (years) 16-29</p> <p>Gender (female) 40%</p> <p>Ethnicity NR</p>	<p>Intervention Text messages on sun safety aimed to increase knowledge, reinforce protective behaviours, change attitudes and increase perceived behavioural control. To maximise appeal, messages were humorous, short, used informal language and were linked to particular annual events (such as Valentine's Day) where possible. Messages were designed to be sent out approximately fortnightly over the summer period, to maximise relevance to the sun safety group.</p> <p>Comparators Text messages on safe sex (designed and delivered as for the sun safety text messages). Note: each group acted as the other's control.</p>	NR	<p>All results not significant.</p> <p><u>Preference for a dark tan</u> OR 1.1 (95% CI: 0.6–2.4, p=0.72)</p> <p><u>Belief about risk of skin cancer</u> OR 1.0 (95% CI: 0.6–1.5, p=0.98)</p> <p><u>Hat wearing frequency</u> OR 1.2, 95% CI 0.7–1.9, p=0.47</p> <p><u>SPF 30+ wearing</u> OR 0.9, 95% CI 0.6–1.4, p=0.64</p> <p><u>Shade seeking frequency</u> OR 1.0, 95% CI 0.6–1.5, p=0.99</p> <p><u>Frequency of wearing skimpy clothing</u> OR 1.0, 95% CI 0.6–1.6, p=0.85</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Good (2011) (17)</p> <p>Design RCT</p> <p>Country UK</p> <p>Quality [+]</p>	<p>Objectives To compare the effects of self-efficacy, self-affirmation and a combination of these techniques for two risk messages.</p> <p>Outcomes and outcome measurement Perceived susceptibility to skin cancer and photoaging risk messages. Three questions assessed whether the personal relevance of the message was accepted. Response scale: 'Not at all (0) to Very much (10)'</p> <p>Age-based denial measured based on statement 'I am too young to get skin cancer/age spots and wrinkles'. Response rated from 0 (not at all) to 10 (very much).</p> <p>Intentions to use high factor sunscreen and reduce UV exposure. Assessed using a 6-item , with each item rated from 0 (not at all/not very much) to 10 (extremely/very much).</p>	<p>A level students and psychology undergraduate.</p> <p>Sample size 677</p> <p>Age (years) 17.76 (16-23)</p> <p>Gender (female) 100%</p> <p>Ethnicity NR</p>	<p>Intervention Single intervention (self-affirmation or efficacy information). Compared to a Intervention (self-affirmation plus efficacy information).</p> <p>Comparators No intervention.</p>	<p>Not applicable</p>	<p>Mean (SD) for skin cancer / photoaging</p> <p>Low-self-affirmation alone: 5.04 (1.25) / 4.80 (1.88)</p> <p>Low-self-affirmation + efficacy info: 5.39 (1.89) /5.31 (2.05)</p> <p>High-self-affirmation alone: 5.00 (1.68) / 5.26 (2.16);</p> <p>High-self-affirmation + efficacy info: 4.80 (1.30) / 5.70 (2.19)</p> <p>Skin cancer message Mean (SD)</p> <p>Low-SE, no EI: 2.58 (3.00)</p> <p>Low-SE+EI: 1.75; (2.55);</p> <p>High-SE, no EI: 3.00 (2.89);</p> <p>High-SE+EI: 2.30 (2.71).</p> <p>Photoaging message</p> <p>Low-SE, no EI: 5.40 (2.94);</p> <p>Low-SE+EI: 4.99 (2.97);</p> <p>High-SE, no EI: 5.61 (3.04);</p> <p>High-SE+EI:4.75 (3.11)</p> <p>Skin cancer message</p> <p>Low-SE, no EI: 5.65 (2.08);</p> <p>Low-SE+EI:6.44 (1.71);</p> <p>High-SE, no EI: 5.71 (1.99);</p> <p>High-SE+EI: 5.91 (2.18)</p> <p>Photoaging message</p> <p>Low-SE, no EI: 5.83 (2.19);</p> <p>Low-SE+EI: 5.91 (2.01);</p> <p>High-SE, no EI: 6.00 (1.78);</p> <p>High-SE+EI: 5.88 (1.99)</p>	<p>There were no significant main effects of threat or self-affirmation on perceived susceptibility, but there was a predicted trend towards greater perceived susceptibility to photoaging, but lower perceived susceptibility to skin cancer, amongst self-affirmed than non-affirmed participants. There was a trend towards higher perceived susceptibility in the efficacy intervention groups.</p> <p>Photoaging messages elicited significantly more age-based denial than the skin cancer message (mean 5.33 vs 2.41, p<0.001).</p> <p>There was also a marginally significant main effect of the efficacy intervention on this variable, with less age-based denial amongst those who received efficacy information than those who did not</p> <p>When the message referred to skin cancer, those who received efficacy information had greater intentions to use sun protection than those who did not (means 6.15 vs 5.68, p=0.03).</p> <p>When the message referred to photoaging, there was no significant difference in the</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
						intentions of those who did and did not receive the efficacy information (means 5.93 and 5.89, p=0.87).

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Gritz 2013 (76) Design RCT Country USA Quality [-]</p>	<p>Objectives Is a melanoma survivor-centred intervention more effective than materials available to the general public in increasing children's sun protection.</p> <p>Outcomes and outcome measurement Children's sunburn and sun protection behaviours (children's sunscreen reapplication at 1 month and use of wide-brimmed hats at 4 months). Sunburn rate at 1 and 4 months post-intervention, on scale of 1-4, where higher scores indicate more negative sun protection outcome expectations and higher levels of other variables; Individual sun protection behaviours and a composite sun protection behaviour score at 1 and 4 months post-intervention (on a scale of 1-5).</p>	<p>Patients diagnosed between 1990 and 2008 with stage 0 to stage IIIB melanoma, and who had a child ≤12 years old.</p> <p>Sample size 340</p> <p>Age (years) 40.45 (6.45)</p> <p>Gender (females) Intervention: 61.2% Comparator: 62.4%</p> <p>Ethnicity Intervention: White: 169 (99.4%) Hispanic: 6 (3.5%) Comparator: White: 168 (100%) Hispanic: 6 (3.5%)</p>	<p>Intervention Sun protection intervention: print booklet #1 and 10-minute DVD, print booklet #2 and magnet, and print booklet #3 and children's activity booklet. Participants received three mailings at their homes over a 5-month intervention period in autumn and winter.</p> <p>Comparators Standard education:3 health-related brochures available to the general public, (i) sun protection, (ii) physical activity, and (iii) nutrition. Brochures were mailed on the same schedule as the sun protection intervention. The standard education group received all intervention materials after the study</p>	<p>Intervention vs control, mean (SE): Sunburn rate: 4.09 (0.19) vs 4.09 (0.17)</p> <p>Sunscreen reapplied after each hour outdoors: 3.18 (0.24) vs 3.18 (0.24); Wearing wide brimmed hats: 2.23 (0.29) vs 2.23 (0.29)</p>	<p>Intervention vs control, mean (SE) post-intervention: Sunburn rate: 1 month: 4.13 (0.17) vs 4.26 (0.17), (p=0.09); 4 months: 4.10 (0.17) vs 4.22 (0.17), (p=0.12) Sunburn rate did not decrease following the intervention (1 month: OR= 0.95, P = 0.90; 4 months: OR =1.01, P =0.98). Sunscreen reapplied after each hour outdoors: 1 month: 3.43 (0.25) vs 3.15 (0.25), (p=0.002); 4 months: 3.41 (0.25) vs 3.31 (0.25), (p=0.27); Positive effects at 1 month post-intervention (Cohen's effect size, d = 0.37). Children wearing wide-brimmed hat: 1 month: 2.37 (0.29) vs 2.32 (0.29), (p=0.06); 4 months: 2.51 (0.29) vs 2.31 (0.29), (p=0.045) Positive effects at 4 months (d = 0.24). No intervention effects on other sun protection outcomes.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Harrison (2013) (97)</p> <p>Design Pre- post-intervention using a survey</p> <p>Country Australia</p> <p>Quality [+]</p>	<p>Objectives To assess the effectiveness of a maternity hospital-based education programme(midwife teaching intervention) to discourage mothers from exposing themselves and their infants to sunlight for therapeutic reasons in an intense ultraviolet radiation environment.</p> <p>Outcomes and outcome measurement Intention to "sun" the baby for jaundice or to help their skin adapt to sunlight, or intention to use sunlight for sore or cracked nipples due to breastfeeding. Information gathered by interview</p>	<p>Healthy post-partum inpatients in the maternity ward of a large regional public hospital.</p> <p>Sample size Pre- and post-intervention women (n = 106 and 203, respectively)</p> <p>Age (mean years) Pre-intervention 27.8+/-5.6 Post-intervention: 27.0+/-5.7</p> <p>Gender (females) 100%</p> <p>Ethnicity Pre- and post-intervention women: Caucasian ancestry: 77.2% vs. 84.4%; (p=0.030)</p>	<p>Intervention Maternity hospital-based education programme (midwife teaching intervention).</p>	<p>'Sun' their baby if they <u>suspected jaundice</u>: 28.8%; <u>Intentionally expose babies to help their skin adapt to sunlight</u>: 10.5%; <u>'sunning' to treat nappy rash</u>: 2.9%; <u>'sunning' to obtain adequate vitamin D</u>: 6.7%; <u>use sunlight to treat sore or cracked nipples</u>: 7.6%; <u>sunlight as a treatment for acne</u>: 8.6%</p>	<p>'Sun' their baby if they <u>suspected jaundice</u>:: 13.3% (p<0.001 vs. pre-intervention); <u>Intentionally expose babies to help their skin adapt to sunlight</u>: 2.5% (p=0.003); <u>'sunning' to treat nappy rash</u>: 2.0% (p=0.694) <u>'sunning to obtain adequate vitamin D</u>: 4.4% (p=0.403); <u>use sunlight to treat sore or cracked nipples</u>: 2% (p=0.026), <u>sunlight as a treatment for acne</u>: 3.4% (p=0.055)</p>	<p>More pre-intervention than post-intervention women reported they would expose their baby to sunlight to: treat suspected jaundice or help their baby's skin adapt to sunlight; fewer post-intervention women indicated they would sun themselves to treat breastfeeding-associated sore/cracked nipples</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Hay (2009) (121)</p> <p>Design Cross-sectional telephone or online survey</p> <p>Country USA</p> <p>Quality [+]</p>	<p>Objectives To examine the association among mass media health information exposure (general health, cancer, sun protection information), skin cancer beliefs, and sun protection behaviours.</p> <p>Outcomes and outcome measurement Sun protection (use of sunscreen, shade seeking, and use of sun-protective clothing) gathered by a survey.</p>	<p>Adults with no skin cancer history.</p> <p>Sample size 1736</p> <p>Age 43.8</p> <p>Gender (female) 50.30%</p> <p>Ethnicity Non-Hispanic White: 66.9%; Non-Hispanic Black: 11.2%; Non-Hispanic other: 7.1%; Hispanic: 14.7%.</p>	<p>Telephone or online survey. Recruitment method: Random-digit dialling</p>	<p>26% often or always used sunscreen; 41% often or always sought shade; 31% often or always wore a hat; 13% often or always wore a long-sleeved shirt; 46% often or always wore long pants when outside on sunny days</p>	<p>Sunscreen use was associated with endorsement of Internet searching for health information in the past 12 months ($p < 0.01$), and Internet searching for sun protection information in the past 12 months ($p < 0.01$). Greater use of sun-protective clothing was associated with having looked for Internet sun protection information in the past 12 months ($p = 0.01$). Recent Internet searches for health or sun protection information were associated with sunscreen use.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
Heckman (2013) (54) Design RCT Country USA Quality [-]	<p>Objectives To compare the efficacy of a UV-photo intervention alone, motivational interviewing (MI) counselling alone, education alone, and a combination of UV-photo and MI counselling in increasing sun protection stage of change (SOC) among young adults.</p> <p>To examine whether treatment process variables (i.e. therapeutic alliance; treatment credibility; MI spirit, adherence, and competence; as well as MI skills including giving information, asking questions, and reflecting statements) contributed to sun protection SOC.</p> <p>Outcomes and outcome measurement Behaviour/intention: stage of change related to using sun protection. Assessed using the four-item Sun Stage of Change (SOC) Scale, with questions based on past, current and future sun protection practices. Scored from maintenance, to pre-contemplation.</p>	University psychology students Sample size 197 Age (years) 20.47 (1.56) Gender (female) 82% Ethnicity White: 76% Black: NR Hispanic: NR Other: 24%	<p>Intervention All participants received same educational pamphlets as the control group, but no discussion with a counsellor. Three intervention groups: (1)UV photographs (regular black and white photo of participants face and UV-filtered version to enhance contrast between normal and damaged skin); (2)Motivational interviewing (MI) counselling session (counsellor first reviews any personalized feedback of risk from baseline assessment, then conducts various exercises according to participant's interest); (3)Combined approach of MI counselling session plus photo.</p> <p>Comparators Educational control: 10-15 minute independent review of standard skin cancer prevention educational brochures and handouts from major professional organizations, followed by discussion with a counsellor.</p>	Proportion at each stage. Pre-contemplation/contemplation: 45% Preparation: 25% Action/maintenance: 30%.	SOC differed significantly by study condition. Photo significantly more effective than education (OR 2.58, 95% CI: 1.06–6.28, z = 2.08, p =0 .04). MI marginally better than education (OR 2.20, 95% CI: 0.91–5.31, z = 1.74, p = 0.08). Differences between other intervention conditions NS.	SOC was more likely to improve in the photo condition compared to the education condition Across intervention conditions treatment credibility (self-rated) and positive alliance (counsellor rated) were associated with greater likelihood of SOC progression. Combining the MI and photo interventions did not result in a benefit over either of the interventions alone.

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Hevey (2008) (36)</p> <p>Design RCT</p> <p>Country Ireland</p> <p>Quality [-]</p>	<p>Objectives To investigate the impact of messages differing in focus (health vs appearance) and frame (gain vs loss) on intentions for sunscreen use and sunbed use, and the potential moderating role of body consciousness.</p> <p>Outcomes and outcome measurement Sunscreen use intentions Three items assessed, e.g. "I intend to use high factor protection sunscreen when I sunbathe this summer". Unclear how response was rated (possibly 7-point Likert scale ranging from disagree to agree). Sunbed use intentions Three items assessed, e.g. "I intend to use sunbeds". Unclear how response rated (possibly 7-point Likert scale ranging from disagree to agree).</p>	<p>Teenagers and adults (about two thirds were university students).</p> <p>Sample size 390</p> <p>Age (years) 20.4</p> <p>Gender (female) 58.6%</p> <p>Ethnicity NR</p>	<p>Interventions Participants were given one of four messages about skin cancer to read. These differed in terms of message focus (health or appearance) and frame (positive or negative).</p>	NR	<p>Main effects: (1) Health effect: M=5.9 (2) Appearance effect: M=5.7 (3) Gain effect: M=5.7 (4) Loss effect: M=5.8 No significant difference in intentions. No significant difference between intentions after reading a gain-framed (M=1.5) or loss-framed (M=1.6) message. No significant difference after reading a health (M=1.5) or an appearance message (M=1.6).</p>	<p>The effect of message frame on intentions to use sunscreen was moderated by appearance motivation. Gain-framed messages had the strongest effect on sunscreen use intentions for those high in appearance motivation compared to those low in body consciousness. There was no difference between gain and loss-framed messages for either sunscreen use or sunbed use intentions. Statistically significant main effect ($F(1, 384) = 10.48, p < 0.001$; partial $\eta^2 = .03$) for body consciousness: higher intentions for those with high body consciousness (M=6.0 vs 5.6) for those with low body consciousness. Statistically significant interaction ($F(1, 382) = 4.22, p < 0.01$, partial $\eta^2 = 0.03$) between message frame and body consciousness: gain-framed messages had the strongest effect on sunscreen use intentions for those high in body consciousness compared to those low in body consciousness. There was no difference between sun protective behavioural intentions after reading about the health consequences of UV exposure rather than appearance consequences. The failure to find any effect on sunbed use may be explained by the fact that participants reported very low levels of sunbed use. No main effects of body consciousness or interaction effects were found.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Hiemstra (2012) (49)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality [+]</p> <p>Earlier questionnaires reported in Hall D M et al. Lifeguards' sun protection habits and sunburns: association with sun-safe environments and skin cancer prevention program participation. Arch Dermatol 2009;145(2):139-144. {#2387}</p>	<p>Objectives To examine changes in: (1) sunburn frequency over a summer while controlling for sun exposure, sun protection habits, and participation in a skin cancer prevention programme; and (2) tanning attitudes while controlling for participation in the prevention programme.</p> <p>Outcomes and outcome measurement Attitudes towards tanning, self-reported via questionnaires that assessed: Item 1: "People are more attractive if they have a tan" (rated on 5-point scale with 1 = strongly disagree to 5 = strongly agree). Item 2: "It helps to have a good base suntan", rated on 4-point scale (1 = not at all to 4 = a great deal). Change in sunburn frequency among lifeguards over a summer, while controlling for sun exposure, sun protection habits, and participation in a skin cancer prevention programme. Measured by questionnaire: how many times (0 to 5 or more)</p>	<p>Lifeguards</p> <p>Sample size 3014</p> <p>lifeguards at 400 swimming pools</p> <p>Age (years) 18.61 (4.66)</p> <p>Gender (female) 59.6%</p> <p>Ethnicity White: 84.3% Black: NR Hispanic: NR</p>	<p>Intervention Enhanced version of the Pool Cool Program for preventing skin cancer. In addition to the basic version, participating pools received additional sun safety items and environmental supports (a set of sun signs, and the chance to accumulate incentive "points" toward recognition levels for implementing the programme). Lifeguards delivered the programme as part of their usual job duties.</p> <p>Comparators Basic version of the Pool Cool Program. Swimming pools received a tool kit, training session, and a gallon pump container of sunscreen.</p>	<p>Mean (SD)</p> <p>Item 1 Basic: 3.61 (0.90) Enhanced: 3.68 (0.91)</p> <p>Item 2 Basic: 2.87 (0.95) Enhanced: 2.83 (0.97)</p> <p>Sunburn frequency Basic: 1.31 (.78) Enhanced: 1.32 (.78).</p> <p>Sun exposure Basic: 4.37 (1.30) Enhanced: 4.38 (1.31).</p> <p>Sun protection habits: Basic: 2.52 (0.56) Enhanced: 2.47 (0.56).</p>	<p>Mean (SD)</p> <p>Item 1 Basic: 3.70 (0.92) Enhanced: 3.73 (0.89)</p> <p>Item 2 Basic: 2.99 (0.92) Enhanced: 2.92 (0.94) Differences between baseline and follow-up: no difference between groups by t test.</p> <p>Sunburn frequency Basic: 1.20 (.80) Enhanced: 1.16 (.80).</p> <p>Sun exposure Basic: 4.62 (1.24) Enhanced: 4.51 (1.28).</p> <p>Sun protection habits Basic: 2.63 (.58) Enhanced: 2.60 (.57). Regression analysis: 1) Sunburn frequency: - controlling for age, gender, education level, and sunburn history at baseline: significant relationship between sunburn history at baseline and sunburns at follow-up (b = .41, P < .001) and between ethnicity and sunburns at follow-up (b= -0.11, p< 0.001) - skin cancer risk was added as a control:</p>	<p>Lifeguards with higher tanning attitudes at baseline were more likely to have higher tanning attitudes at follow-up. No significant relationship between Pool Cool participation and the attitude that tanned people are more attractive, or the notion that a good base tan helps, was found at follow-up. Findings revealed that important predictors of future sunburns are previous sunburns, ethnicity, higher skin cancer risk, and more sun exposure.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
	<p>participants were sunburned last summer (baseline) and this summer (follow-up). Sunburn frequency was recoded as none, one, or two or more sunburns during the summer (range 0 to 2). Sun exposure measured by questionnaire: the number of hours per day the respondent was in the sun from 10 AM to 4 PM on weekdays, and on weekends. A summary indicator of average daily sun exposure in hours was created by multiplying weekday hours by 5, weekend hours by 2, and dividing by 7 (alpha = .74). Sun protection habits. The frequency of practising 5 sun protective behaviours when outdoors in the sun: wear a shirt with sleeves, wear sunglasses, stay in the shade or under a beach umbrella, wear sunscreen, and wear a hat. Items were scored on 4-point scales from 1 (rarely/never) to 4 (always). The total of the 5 items was divided to create an average score (alpha = .59).</p>				<p>significant relationship between sunburn history at baseline (b=.39, p,< 0.001), ethnicity (b= -0.7, p<0.05), and having a high skin cancer risk (b = .13, P < 0.001) was associated with increased risk to get sunburns at follow-up;</p> <ul style="list-style-type: none"> - sun exposure, sun protection habits, and Pool Cool programme participation added as control: significant relationship maintained between sunburn history at baseline (b=.38, p<0.01), ethnicity (b= -0.7, p<0.01), and sunburn at follow up; plus: having a moderate skin cancer risk was at increased risk of having sunburns at follow-up compared with those with lower risk (b = .05, P = .04). Sun exposure was also a risk factor: 1 hour more of sun exposure daily (b = .05, P = .02) increased the risk of sunburns at follow-up. Sun protection habits not a significant predictor of sunburn at follow-up after controlling for all above variables. 	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
Hillhouse (2008) (51) Design RCT Country USA Quality [++]	<p>Objectives To evaluate a brief appearance-focused intervention based on a theoretical model with mediational analyses designed to assess whether observed programme effects are a result of changes in targeted individual level variables.</p> <p>Outcomes and outcome measurement Indoor tanning intentions: Participants asked how strongly they intended to engage in 2 indoor tanning-related future behaviours (7-point Likert scales). Attitudes towards indoor tanning: 2 items assessed on a 5-point Likert scale.</p>	<p>Female university students Sample 430 Age (years) 19 Gender (female) 100% Ethnicity NR</p>	<p>Intervention Appearance-focused booklet based on decision-theoretical models of health behaviour. Control No intervention.</p>	<p>Indoor tanning intentions, mean (SE) Intervention: 9.55 (0.29); Control: 10.01 (0.26).</p> <p>Indoor tanning attitudes Mean (SD) Intervention : 15.9 (0.35); Control: 16.3 (0.33);.</p>	<p>Indoor tanning intentions at 6 months, mean (SE) Intervention: 8.65 (0.30). Control: 10.51 (0.28) Significant F(df = 1400) = 15.64; p<0.001, 2-tailed. The intervention was effective at reducing intentions to indoor tan at the long-term follow-up.</p> <p>Indoor tanning attitudes Mean (SD) Intervention: 14.0 (0.36); Control: 17.2 (.34); Intervention effect on mediator alpha -3.18 p<0.001. Mediator effect on outcome, beta 0.47 p<0.001 Mediated effect (alpha, beta) - 1.49. p<0.01. Statistically significant mediated effects were found for attitudes toward indoor tanning (p<0.01).</p>	<p>Baseline represents indoor tanning for August through October; Long-term follow-up represents indoor tanning for February through April. Statistically significant mediated effects were also found for attitudes toward using fashion) and perceptions that tanning enhances attractiveness (both p<0.05) but not attitudes towards sunless tanning.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
Hillhouse 2010 (74) <u>Design</u> RCT <u>Country</u> USA <u>Quality</u> [+]	<u>Objectives</u> To evaluate the robustness of an appearance-focused intervention to prevent skin cancer in individuals reporting seasonal affective disorder (SAD) symptoms and pathological tanning motives. <u>Outcomes and outcome measurement</u> Self reported number of tanning sessions, as influenced by moderators.	Adult females. <u>Sample size</u> 430 <u>Age (years)</u> 18.6 (17 - 21) <u>Gender (females)</u> 100% <u>Ethnicity</u> NR	<u>Intervention</u> Participants received a booklet discussing the history of tanning, current tanning norms, UV radiation's effects on skin, recommendations for indoor tanning use focusing on abstinence and harm reduction recommendations, and information on healthier, appearance-enhancing alternatives to tanning. <u>Comparators</u> No intervention.	NR, regression analyses performed	For participants who scored high on the pathological tanning scales for - Opiate like reactions: regression - beta (SE) -0.77 (0.28) 95% CI -1.39 to -0.16 (p=.01) - Skin tone dissatisfaction: regression - beta (SE) -1.05 (0.40) 95% CI -1.76 to -0.35 (p=.003). NS for other scores on pathological tanning scale: tolerance and tanning a problem or for symptoms of SAD. The intervention reduced indoor tanning among tanners who exhibit SAD symptoms or pathological tanning motives. 2/4 pathological indoor tanning scales were found to be significant moderators of the appearance-focused intervention effects: opiate like reactions to tanning and dissatisfaction with natural skin tone. Both scales showed progressively greater between-group differences from below average through average and above average levels of each moderator variable. The intervention showed small effects for participants scoring below average on these 2 pathological tanning behaviour scales, while demonstrating modest effects for individuals with average scores and strong effects for participants scoring above average on these constructs. Tanners who reported evidence of physiologic reinforcement for their tanning behaviour also demonstrated the biggest reductions in indoor tanning behaviour at follow-up. The intervention seemed particularly effective for tanners who were more strongly dissatisfied with their natural skin tone.

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Hoffner (2009) (31)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality [-]</p>	<p>Objectives To assess whether personal risk of skin cancer will be higher for the loss frame than for the gain frame message, which in turn will be higher than for the control article; to determine how the gain and loss frames differ from the control group on (a) intended sunscreen use and (b) planned SPF; to determine how social comparison orientation will be related to (a) personal risk, (b) intention to use sunscreen, and (c) planned SPF following message exposure; to assess whether social comparison orientation interacts with framing to affect the three dependent variables.</p> <p>Outcomes and outcome measurement Personal risk of developing skin cancer on three 7-point Likert scales (1 - strongly disagree, to 7 - strongly agree). Sunscreen use intentions: Likelihood of engaging in four different behaviour related to sunscreen use (7-point scale ranging from 1 (never) to 7 (always)). Choice of sunscreen (SPF) planned to use most often in the future, ranging from none (coded 0) to an SPF higher than 45 (coded 7), with SPF 15 coded 4. Sunbed use intentions assessed by 3 items, e.g. I intend to use</p>	<p>University students</p> <p>Sample size 191</p> <p>Age (years) 20</p> <p>Gender (female) 65.4%</p> <p>Ethnicity White: 41.4% Black: 36.6% Hispanic: 4.2% Asian/Pacific Islander: 8.4% Native American: 0.5% Other/mixed ethnicity: 8.9%</p>	<p>Intervention News articles about skin cancer that used a gain frame (e.g., using sunscreen keeps skin healthy) or a loss frame (e.g., not using sunscreen increases skin cancer risk), and included a personal exemplar (healthy or ill); focused on the use of sunscreen during the winter months (the study took place during November and December).</p> <p>Comparators Control group read an article about nutrition.</p>	<p>Baseline <u>Extent of typical sunscreen use (scale of 1 = never to 7 =always):</u> Mean = 3.05, SD = 1.96.</p>	<p>Results <u>Personal risk of developing skin cancer</u> Framing was not a significant predictor of personal risk ($p > 0.05$). <u>Extent of typical sunscreen use (scale of 1 = never to 7 =always):</u> Control: 3.44 Loss frame: 4.11 Gain frame: 4.08 <u>Planned SPF use</u> Significant interaction between article version and gender, $F(2,181) = 5.32, p < 0.01, \eta^2 = 0.06$. Men: Loss frame: 4.51 Gain frame: 3.25 Control: 3.68. No difference between framing groups and control. Women: Loss frame: 3.65; Gain frame: 4.17; Control: 4.19. No difference between groups.</p>	<p>The analysis showed a main effect of gender, $F(1,183) = 4.29, p < 0.05, \eta^2 = 0.02$, with greater intended sunscreen use among women ($M = 4.07$) than among men ($M = 3.69$).</p>

	sunbeds". Unclear how response rated (possibly 7-point Likert scale ranging from disagree to agree).					
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Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Hunter 2010 (62) (See also Roetzheim 2011)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality [++]</p>	<p>Objectives To increase the use of hats among children who received educational training on sun protection at school and at times other than school.</p> <p>Outcomes and outcome measurement Change in observed hat use at school (any type of hat): % (95% CI). Direct observation by research assistant.</p>	<p>Primary school children.</p> <p>Sample size 22 schools; 2395 students.</p> <p>Age Grade 4 students.</p> <p>Gender NR</p> <p>Ethnicity (white) Intervention:39% Control: 50%</p>	<p>Intervention Classroom sessions targeting sun protection attitudes and social norms. A 45-minute comprehensive sun protection educational classroom session for pupils was carried out by a community health education organisation; followed by three 60-minute follow-up sessions addressed the benefits of sun protection (with emphasis on hat use), promoted favourable attitudes about sun protection, and made clear that pupils were both allowed to wear hats at school and should be wearing hats while outside at school; Two free wide-brimmed hats (one to use at school and one to use at home) were provided.</p> <p>Comparators Children at control schools received three to five 60-minute educational sessions on topics in science unrelated to sun protection.</p>	<p>Hat use Intervention: 2.0 (95% CI: 1.1 to 3.1) Control: 1.7 (95% CI: 1.0 to 2.7)</p>	<p>Hat use Autumn: Intervention: 29.5 (95% CI: 26.3 to 32.8) Control: 0.3 (95% CI: 0.1 to 0.8).</p> <p>Hat use: Spring: Intervention: 40.5 (95% CI: 37.2 to 43.8) Control: 1.1 (95% CI: 0.6 to 1.8). (unchanged)</p> <p>Intervention: hat use increase was significant (P < .001) for intervention vs control schools. Use of wide-brimmed hat use increased significantly in intervention (P < .001 for change in rate of hat use over time at intervention vs control schools).</p> <p>Self-report of hat use outside of school hours (wide brimmed hat only) did not change statistically significantly during the study (control: baseline = 14%, autumn = 14%, and spring = 11%; intervention: baseline = 24%, autumn = 24%, and spring = 23%).</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
Hwang (2012) (29) Design RCT Country USA Quality [+]	Objectives To assess the effects of gain- and loss-framed messages on the sun safety behaviour of adolescents through the moderation of risk perceptions. Outcomes and outcome measurement Impact of perceived susceptibility to skin cancer on persuasiveness of risk messages: 3 statements on susceptibility and 3 on impact of perceived effectiveness of sun protection on a 7-point Likert scale (1 -strongly disagree to 7 -strongly agree). Behavioural intentions: 5-point Likert scale (1 -never to 5 -always)	High school students who were members of Young Farmers of America in the rural US Midwest Sample size 219 Age (years) 15.69 (1.13) (12-18) Gender (female) 44.7% Ethnicity White: 94.5%	Intervention Package containing pre- and post-tests. The gain-framed message presented the positive outcome of an individual engaging in sun safety practices (use of sunscreen and protective clothing, i.e. long sleeve shirts and long pants). Comparators Package containing pre- and post-tests. The loss-framed message presented the negative outcome of an individual not engaging in sun safety practices (use of sunscreen and protective clothing).	Pre-intention (B, SE) to use: Sunscreen: 0.81 (0.04); long-sleeve shirt: 0.67 (0.05); long pants 0.78 (0.04)	Intention to use sunscreen was influenced by the interaction between the framing condition and perceived effectiveness ($p < 0.05$) and perceived susceptibility ($p < 0.05$). There was an influence on wearing of long pants for perceived susceptibility only ($p < 0.05$). There was no influence on intention to wear a long sleeve shirt.	A gain-framed message was more effective when perceived effectiveness was high than when it was low; this effect was non-significant. Participants' preference for the loss-framed message over the gain-framed message generally increased as the level of perceived susceptibility increased; this effect was non-significant.

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Isaacowitz (2012) (42)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality [-]</p>	<p>Objectives To investigate how age related changes in attention to negative but relevant information about skin cancer risk reduction influenced both subsequent health behaviour and mood regulation. To investigate how age- related changes in attention to negative but relevant information about skin cancer risk reduction influenced both subsequent health behaviour and mood regulation.</p> <p>Outcomes and outcome measurement (1) mole image ratings - participants shown 22 images of moles, both normal and with melanoma and were asked to score the likelihood of the image being a melanoma on a 6 point scale. (2) Likelihood of returning a mole map of their own bodies after skin self-examination within week after the study was completed.</p>	<p>Adults</p> <p>Sample size Group 1: 78, Group 2: 77</p> <p>Age (mean years) Group 1: 19.5 Group 2: 71.6.</p> <p>Gender (females) Group 1: 64.1%; Group 2: 81.8%</p> <p>Ethnicity White</p>	<p>Intervention 1) Emotion-focused group: asked to view 2 videos (1 on melanoma and 1 on how to reduce skin cancer risk by self-examination) "with the goal of managing your emotions and avoiding feeling bad as much as you can." (2) Information-focused group: asked to view the 2 videos "with the goal of getting as much information as possible and to be as thorough as you can in collecting information so that you can act later based on what you have learned." Comparators Control group: asked to view the 2 videos "naturally as if you were watching television at home".</p>	<p>20 item skin cancer knowledge test Mean for all participants: 11.3 (SD 0.28)</p>	<p>Younger adults (group 1) were better able to distinguish harmful moles from normal moles, showing high concerns for only melanoma moles Older adults rated all the moles (regardless of type) of higher concern (M = 4.8, SD = .08) than did younger adults (M = 4.5, SD = .08), F(1, 149) = 6.52, p = .012. $\eta^2 = .04$. No effects found for different group instructions (emotion focused, information focused, control). 64.9% of older age group and 48.7% of younger age group returned their self examination mole map. No significant effect according to instruction group (all p values > .49). 20 item skin cancer knowledge test Mean for all participants: 17.2 (0.16 SD). No significant effects by instruction group. A 2 (test time: pre, post) x 2 (age group: younger, older) x 3 (instruction group: control, emotion-focused, information-focused) mixed ANOVA on the knowledge test scores examined whether older and younger adults differed in learning skin cancer information from the materials presented within the experiment. Generally, there were higher scores at post (M = 17.2, SD</p>	<p>Melanoma moles (M = 5.3, SD = .04) were rated to elicit higher concern than normal moles (M = 4.0, SD = .08), F(1, 149) = 480.93, p < .001, $\eta^2 = .76$. A significant Mole Type x Age interaction, F(1, 149) = 7.84, p = .006, $\eta^2 = .05$, indicated that younger (M = 5.3, SD = .06) and older (M = 5.4, SD = .06) adults did not differ in their concerns about melanoma moles, t(153) = 1.35, p = .18, but older adults (M = 4.3, SD = .11) were more concerned about normal moles than were younger adults (M = 3.8, SD = .11), t(153) = 2.87, p = .005. A significant Time x Age interaction, F(1, 146) = 24.49, p < 0.001, $\eta^2 = .14$, indicated that older adults knew more before the experiment (M = 12.1, SD = .39) than did younger adults (M = 10.5, SD = .39), t(150) = 2.97, p = .004, but older adults learned less after the experiment (M = 16.7, SD = .23) than did younger adults (M = 17.6, SD = .23), t(150) = 2.85, p = .005. There were no other effects or interactions, all ps > .23. Older adults engaged in a greater number of protective behaviours than did younger adults. A 6 (item choice) x 2 (age) x 3</p>

	<p>(3) Knowledge of skin cancer. 20 item survey with a maximum score of 20 based on knowledge from the videos.</p> <p>(4) Sun protection intentions by selection of appropriate sun protection items.</p>			<p>=0.16) than at pre (M = 11.3, SD = 0.28), $F(1, 146) = 526.09$, $p < 0.001$, $\eta^2 = 0.78$. Older adults (n=47), chose 1 more give-away items than younger adults (n=36) (M =3 vs M=2), $F(1, 148) = 16.31$, $p < 0.001$, and were more likely to choose high SPF (30 or 50) sunscreen, $\chi^2(1, N = 154) = 3.81$, $p = 0.05$.</p>	<p>(instruction group) mixed ANCOVA using gender as a covariate found that gender was not significant as a covariate and did not show any other effects, $p > 0.20$. The effect of age was significant, $F(1, 146) = 8.95$, $p = 0.003$; older adults were more likely to select more items than younger adults</p>
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Study details	Objectives and outcomes	Systematic review methods	Results	Comments
<p>Italia (2012) (44)</p> <p>Design Systematic review</p> <p>Country Australia, New Zealand, the UK, Sweden, Germany, Italy, Switzerland, Finland, the USA, Canada and Columbia</p> <p>Quality [moderate]</p> <p>Erratum in: N. Italia and E. A. Rehfuss. Is the Global Solar UV Index an effective instrument for promoting sun protection? A systematic Corrigendum. Health Education Research. 2012. 27:1129-1131 (#11699)</p>	<p>Objectives To review the effectiveness of the UV Index as a health promotion instrument.</p> <p>Outcomes and outcome measurement Attitudes towards sun protection and/or intention to use sun protection using a questionnaire (and 'score') Knowledge of role of UV radiation in increasing skin cancer risk assessed by questionnaire. General sun protection assessed by questionnaire. Use of protective clothing, assessed by questionnaire or diary. Use of sunscreen assessed by questionnaire or diary. Time spent in the sun assessed by questionnaire or diary and measured as sunbathing, or average daily time in the sun.</p>	<p>Intervention UV Index interventions classified as: Media campaigns (18 studies), programmes in childcare settings, programmes directed at high-UV radiation settings, programmes through health care providers, programmes using general or personalised information (6 studies), including UV meters (2 studies); or a combined approach (1 study). The term 'intervention' comprised both proactive, specific intervention studies or programmes and surveys examining familiarity with the UV index unlinked to a specific intervention study or programme.</p> <p>Comparators No UV index intervention, or different UV information</p>	<p>Number of studies Included studies were a media campaign (18 studies), programmes using general or personalized information materials (6 studies), of which two also used UV meters, and a combination approach (1 study). One RCT found an improvement in attitude across all groups but no differences between groups. No effect (change of <10%) of the intervention. Improvement in knowledge across all groups but no differences between groups in one RCT; increase in knowledge in two cross-sectional studies. No effect (change of <10%) in one Swedish RCT that randomized Stockholm residents to four groups receiving different UV information packages in spring; two of these included UV meters. Studies classified as strong or moderate suggest that the UV Index has no influence on knowledge. One Swedish RCT showed an increase in general sun protection with intervention (no further details). One Australian RCT showed no effect (improvement in behaviour over time across all groups but no differences between groups). Four Australian and one US cross-sectional studies showed an increase, but a further five cross-sectional studies (one each from Australia, Germany, Sweden, Switzerland and the UK) showed no effect. The study that reported no effect (change of <10%) was the Swedish RCT that randomized Stockholm residents to four groups receiving different UV information packages in spring; two of these included UV meters. The study that reported an increase was an Australian RCT that randomly assigned employees of three</p>	<p>Results came from one Swedish RCT that randomized Stockholm residents to four groups receiving different UV information packages in spring; two of these packages included UV meters.</p>

Study details	Objectives and outcomes	Systematic review methods	Results	Comments
			<p>consultant firms and one university in Melbourne to three different weather forecast conditions, i.e. standard weather forecast plus/minus UVI plus/ minus sun protection message .</p> <p>One Australian RCT showed no effect (change <10%) (no statistically significant differences between groups in reported hat use). One Italian RCT showed a decrease with the use of UV meters (these turned out to be faulty: they underestimated actual UVI values by 20-40%, suggesting that significantly lower reported than actual UVI values may have encouraged those in the intervention group to less frequently adopt protective measures). One UK cross-sectional study found increase in use of protective clothing. Strong and moderate studies suggest that the UVI exerts no or only a limited influence on sun protection behaviours. (MGC: 8 cross-sectional studies assessed as weak; 2 classed as moderate - both showed no effect).</p> <p>One Australian RCT showed no effect (change <10%) , one Italian RCT showed a decrease (with defective UV meters). One UK cross-sectional study found increase in use of sunscreen.</p> <p>Strong and moderate studies suggest that the UVI exerts no or only a limited influence on sun protection behaviours. (Italian RCT and UK study assessed as weak). In the Italian RCT, the intervention group was less likely to apply sunscreen than the control group but this unexpected decrease is likely to be a consequence of unreliable UV meters.</p> <p>One Australian RCT showed no effect (change <10%); one Italian RCT showed an increase (with defective UV meters).</p>	

Study details	Objectives and outcomes	Systematic review methods	Results	Comments
			<p>UVI awareness was associated with reduced sun exposure in two cross-sectional studies from the UK. UVI exerts no or only a limited influence on sun protection behaviours. Based on strong and moderate studies, the UVI does not appear to influence sun exposure. (Note: Italian RCT and cross-sectional studies assessed as weak).</p>	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Janssen (2013) (33)</p> <p>Design RCT</p> <p>Country The Netherlands</p> <p>Quality [-]</p>	<p>Objectives To compare the effects of narrative and non-narrative risk communication about sunbed use on ease of imagination and feelings of cancer risk.</p> <p>Outcomes and outcome measurement Perception of vulnerability to skin cancer. Feelings of risk assessed using 4 questions associated with sunbed use, on a 7-point scale</p>	<p>Adult female sunbed users</p> <p>Sample size 233</p> <p>Age (years) 42 (14.04)</p> <p>Gender (female) 100%</p> <p>Ethnicity NR</p>	<p>Intervention Three conditions were compared with each other: A narrative message (i.e., personal testimonial); A non-narrative cognitive message (i.e., factual risk information using cognitive-laden words); A non-narrative affective message (i.e., factual risk information using affective-laden words).</p>	NR	<p>Mean (SD) feelings at 3 weeks: Non-narrative cognitive condition: 3.1 (1.28); Non-narrative affective condition: 3.5 (1.28); Narrative condition: 3.1 (1.32), NS. Narrative information evoked more feelings of risk than non-narrative cognitive information ($p = 0.020$), and non-narrative affective information ($p = 0.001$) immediately post-intervention. No significant difference was found between the narrative condition and non-narrative conditions on feelings of risk at follow-up. The results indicated that there were positive short-term effects of the narrative condition on feelings of risk</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Jessop (2009) (32)</p> <p>Design RCT</p> <p>Country UK</p> <p>Quality [-]</p>	<p>Objectives To compare the efficacy of three self-affirmation manipulations in reducing defensive processing and instigating behaviour change in response to personally relevant information about the health risks of sunbathing.</p> <p>Outcomes and outcome measurement Beliefs in effectiveness of using sunscreen to reduce skin cancer. Two questions about effect of sunscreen use in next 2 weeks, rated from 1 (totally disagree) to 9 (totally agree) Self-efficacy. Beliefs about ability to use sunscreen assessed using 2 items, rated on a 9-point scale (ranging from totally disagree to totally agree). Higher scores represented higher levels of self-efficacy Sunscreen use attitudes were assessed by rating behaviour on four pairs of semantic differentials (e.g. bad [1] to good [9]), negative [1] to positive [9]). Higher scores indicated more positive attitudes. Sunscreen use intentions were assessed using 2 items, rated on a 9-point scale</p>	<p>Adult female beach goers</p> <p>Sample size 169 (163 analysed)</p> <p>Age (years) 33.33 (13.97) (18-92)</p> <p>Gender (female) 100%</p> <p>Ethnicity White: 100%</p>	<p>Intervention Three self-affirmation manipulations were evaluated, of which only the 'values affirmation' condition was relevant to the current review question. Participants in the 'values affirmation' condition undertook a self-affirmation task - asked to choose their most important value and write a short statement about it, focusing on why the value was so important to them and how it had influenced their behaviour. The self-affirmation task was appended to the questionnaire and health promotion leaflet all participants received.</p> <p>Comparators Control: No self-affirmation task. Participants received the health promotion leaflet.</p>	NR	<p>Beliefs in effectiveness of using sunscreen to reduce cancer risk (Mean (SD)): Control 6.93 (2.19); Values affirmation 8.33 (1.10); Kindness affirmation 8.00 (1.35); Positive traits affirmation 8.17 (1.32); F 6.90, p<0.001 There was a significant effect of condition on response-efficacy, F(3, 158)=6.90, p<0.001 Participants in the three affirmation conditions reported higher levels of response-efficacy than those in the 'control' condition, t(49.41)=3.44, p=0.001, d=0.80.</p> <p>Self-efficacy (Mean (SD)): Control 6.71 (2.41); Values affirmation 8.43 (0.96); Kindness affirmation 7.73 (1.27); Positive traits affirmation 7.80 (1.68); F 7.62, p<0.001. Significant effect of condition on self-efficacy, F(3, 159) =7.62, p<0.001, partial eta squared=0.13. 'Control' group reported (marginally) lower levels of self-efficacy than the 'values affirmation' (p<0.001), 'kindness affirmation' (p<0.09) and 'positive traits affirmation' (p<0.10) groups (Ms 6.71, 8.43, 7.73 and 7.80, respectively). 'Values affirmation' group reported higher levels of self-efficacy than those in the 'kindness affirmation' group (p<0.05).</p> <p>Sunscreen use attitudes (Mean (SD)): Control 7.21 (1.91); Values affirmation 8.11 (1.44); Kindness affirmation 8.26 (0.96); Positive traits affirmation 7.74 (1.72); F 3.72, p<0.05.</p>	<p>Participants in the three affirmation conditions reported: (1) higher levels of self-efficacy than the 'control' condition, t(50.15)=3.24, p<0.01, d=0.76. (2) more positive attitudes than the 'control' condition, t(57.13) =2.55, p<0.05, d=0.53. (3) higher intentions compared to the 'control' condition, t(62.46) =2.19, p<0.05, d=0.42</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
	<p>(ranging from totally disagree to totally agree). Higher scores indicated higher intentions.</p> <p>Behavioural measure: Participants were asked to respond to the written question 'Would you like a free sample of sunscreen (SPF15p)?' ('yes'/'no'). If they responded in the affirmative they were given a free sample of sunscreen by the researcher.</p>				<p>Significant effect of condition on attitude, $F(3, 159) = 3.72, p < 0.05$, partial eta squared = 0.07. 'Control' group reported (marginally) less-positive attitudes towards sunscreen use than those in the 'kindness affirmation' ($p < 0.05$) and 'values affirmation' ($p < 0.08$) groups (Ms 7.21, 8.26 and 8.11, respectively).</p> <p><u>Sunscreen use intentions (Mean (SD)):</u> Control 6.48 (2.52); Values affirmation 7.30 (2.64); Kindness affirmation 7.40 (1.89); Positive traits affirmation 7.59 (1.79); $F 1.95$; not significant.</p> <p>No effect of condition on intentions to use sunscreen, $F(3, 158) = 1.95, p = 0.12$, partial eta squared = 0.04.</p> <p><u>Would you like a free sample of SPF 15 sunscreen? Yes</u> Control: 40.48% (17/42) Values affirmation: 54.76% (23/42); Kindness affirmation: 35.00% (17/42); Positive traits affirmation: 63.16% (24/38) Significant differences, chi squared (3, $N = 162$) = 7.92, $p < 0.05$, Cramer's $V = 0.22$.</p> <p>Because preliminary analysis revealed that the impact of condition on behaviour was not moderated by current sunscreen use ($p = 0.76$), authors conducted one regression analysis for all participants. Condition was dummy coded for this analysis, such that the first dummy variable (D1) compared the 'kindness affirmation' condition (allocated a value of 1) to the control condition (allocated a value of 0), the second dummy variable (D2) compared the 'values affirmation' condition (1) to the control condition (0), and</p>	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
					<p>the third dummy variable (D3) compared the 'positive traits affirmation' condition (1) to the 'control' condition (0). The dependent variable was whether participants requested a free sample of sunscreen (1) or not (0). The resultant model significantly predicted whether or not participants requested a free sample of sunscreen, chi squared (3) =8.01, $p < 0.05$, with 60.5% of responses correctly classified, RL squared = 0.04. Inspection of the beta-weights revealed that D3 was the only significant predictor (beta=0.92, $p < 0.05$), demonstrating that the 'positive traits affirmation' condition was the only condition to differ significantly from the 'control' condition, with those in the 'positive traits affirmation' condition being more likely to request a free sample of sunscreen. This effect remained significant when they controlled for each of the measures of defensive processing and message acceptance in turn, indicating that none of these measures mediated the influence of condition on behaviour.</p>	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
Kahn (2011) (120) Design Longitudinal survey. Country USA Quality [+]	Objectives To explore whether maternal communication about behaviours that prevent skin, cervical, and lung cancer is associated with adolescent cancer prevention behaviours Outcomes and outcome measurement Sunscreen use measured by questionnaire.	Adolescents and young adults participating in the Growing Up Today Study. Sample size 10409 Age (years) 14 - 21 Gender (female) 60% Ethnicity NR	Survey conducted with individuals participating in the Growing Up Today Study.	N (%) represents boys and girls who often, always (vs. sometimes/seldom/never) used <u>sunscreen</u> during the previous summer for each category of frequency of maternal communication. 7,895 in 2001 (mean age 17.1 years); Frequency of maternal communication about specific behaviour in 2001: Never: 45 (8.4%); Once: 49 (10.9%); Occasionally: 302 (16.3%); Sometimes: 435 (22.8%); Often 1,454 (46.3%), (p<0.0001)	Sunscreen use. 6,594 in 2003. Frequency of maternal communication about specific behaviour in 2003: Never: 48 (11.3%); Once: 45 (12.5%); Occasionally: 333 (21.5%); Sometimes: 438 (27.95); Often: 1,191 (44.2%) (p<.0001)	Maternal communication about the importance of sunscreen use in 2001 was positively associated with adolescent behaviour in 2001 and 2003.

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Koster (2011) (123)</p> <p>Design Telephone and online surveys</p> <p>Country Denmark</p> <p>Quality [+]</p>	<p>Objectives To describe the development in sunbed use after the start of a campaign in the period 2007–2009.</p> <p>Outcomes and outcome measurement Frequency of sunbed use, age at first sunbed use: 'How often did you use a sunbed within the past 12 months?' and 'How old were you, when you first used a sunbed?'</p>	<p>Teenagers and adults.</p> <p>Sample size 17,217</p> <p>Age (years) 15–59</p> <p>Gender (female) 54% (number analysed)</p> <p>Ethnicity NR</p>	<p>Web interviews were conducted through existing web panels (Epinion and Userneeds); random-digit dialling. Supplementary groups of respondents to match the Danish population by age, gender and region were recruited from a list of telephone numbers provided by Statistics Denmark.</p>	<p>Frequency of sunbed use (%): March 2007 (n = 3356) More than once a week: 1.2; Once a week: 2.7; More than once a month: 4.5; Once a month: 7.4; Fewer than four times a year: 13.9; Not within the past 12 months: 32.4; Never: 37.5.</p> <p><u>(%) of 'ever' sunbed users aged 15–19 years by age at first sunbed use (≤18):</u> first use at age of <13 years: 13% 13–15 years: 75% in 2007</p>	<p>Frequency of sunbed use (%): August 2007 (n = 3497); August 2008 (n = 3915); August 2009 (n = 3746). More than once a week: 1.2; 0.8; 0.6; Once a week: 1.8; 2.1; 1.0; More than once a month: 5.0; 5.0; 3.6; Once a month: 6.4; 5.9; 5.4; Fewer than four times a year: 13.4; 12.9; 12.6; Not within the past 12 months: 31.8; 30.7; 35.6; Never: 40.3; 42.4; 40.9.</p> <p><u>(%) of 'ever' sunbed users aged 15–19 years by age at first sunbed use (≤18):</u> first use at age of <13 years: 8% 13–15 years: 65% in 2009</p> <p>Sunbed use in Denmark decreased concurrently with the campaign activities, with the largest change in the youngest age group, which was a prioritized target of the campaign. The age at initiation of use increased during this period.</p>

Study details	Objectives and outcomes	Systematic review methods	Results
<p>Kutting 2010 (109)</p> <p>Design Systematic review</p> <p>Country Germany</p> <p>Quality [low]</p>	<p>Objectives To provide an overview of skin cancer with particular focus on occupational concern. To provide evidence-based recommendations for effective prevention at workplace.</p> <p>Outcomes and outcome measurement Willingness to follow preventive strategies. Sunscreen use. Unclear how outcomes were measured in the various included studies.</p>	<p>Population Workers at risk of skin cancer</p> <p>Intervention Recommended strategies for primary and secondary prevention of occupationally-induced skin cancer. The employer can limit or minimise the exposure to sun of outdoor workers during peak hours (10 a.m. to 4 p.m.), job rotation, awnings, wearing protective clothing such as broad-brimmed hats and long-sleeved shirts, sunscreen use. Secondary prevention of skin cancer through a dermatological examination or medical screening. Intervention programmes to enhance acceptance to follow the recommended prevention strategy</p> <p>Comparators Comparators were not reported</p>	<p>Willingness to follow preventive strategies: no numerical results reported.</p> <p>Sunscreen use: The use of sunscreen increased in the complete and partial intervention group by 80% and 52%, respectively, after 1 year (1 study).</p> <p>Willingness/acceptance: Two studies reported that intervention programmes were able to enhance the acceptance to follow the recommended prevention strategy. One study evaluated lifeguards' and aquatic instructors' sun protection habits and sunburn in association with sun-safe environments and skin cancer prevention programme participation, and found that social norms supporting sun safety were associated with increased sun protection habits and there was a trend towards fewer sunburns.</p> <p>Sunscreen use: A graded work site intervention programme including 144 male outdoor workers of the Israel National Water Company allocated to one of three intervention groups (complete, partial or minimal intervention); results for the minimal intervention were not reported.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Lee (2013) (104)</p> <p>Design A pre- and post-survey</p> <p>Country USA</p> <p>Quality [+]</p>	<p>Objectives To evaluate changes in beliefs and attitudes toward sun protection behaviours before and after implementation of the evidence-based “Sun Solutions” educational module among operating engineers.</p> <p>Outcomes and outcome measurement Intention to use sunscreen assessed by a survey.</p>	<p>Outdoor workers</p> <p>Sample size 232</p> <p>Age 45.6</p> <p>Gender (female) 10.4%</p> <p>Ethnicity White: 90.0%</p>	<p>Survey of operating engineers.</p>	<p>70% used sunscreen sometimes or never when working outside.</p>	<p>84% expressed future intention to use sunscreen. Intentions to use sunscreen increased.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
Lemal (2010) (8) Design RCT Country Belgium Quality [+]	Objectives To evaluate the effectiveness of narrative and non-narrative skin cancer message types in influencing actual positive health behaviour, comprising both preventive health actions and information-seeking. Outcomes and outcome measurement Health protection behaviours. Participants were asked by questionnaire at follow up whether they had actually engaged in skin self-examination, had looked for additional information about skin cancer, had paid more attention to information and had talked to family members, friends or a physician about skin cancer.	Flemish university students Sample size 230 Age (years) 20.3 (18 to 25) Gender (female) 78.4% Ethnicity White	Intervention Narrative skin cancer messages. Comparators (1) Non-narrative skin cancer messages. (2) Control	Behaviours were measured at baseline, but values were not reported. 43.6% of participants had previously had their skin checked; 76.3% had not searched for information about skin cancer in the previous year.	Checked skin for strange moles: Control: 1.0; Non-narrative: OR 1.82 0.95–3.5; Narrative OR 3.16 (1.64–6.09). Searched for information: Control: 1.0; Non narrative: OR 3.38 (1.14–10); Narrative: OR 3.97 (1.36 to 11.53). Paid more attention to information: Control: 1.0; Non narrative: OR 1.59 (0.77–3.27); Narrative: OR 1.96 (0.96 to 4.0). Talked to family members/friends: Control: 1.0; Non narrative: OR 1.37 (0.64–2.94); Narrative: OR 2.14 (1.03 to 4.42). Talked to physician: Control: 1.0; Non narrative: OR 1.77 (0.48–6.53); Narrative: OR 0.84 (0.18 to 3.86).	Participants who had been exposed to the narrative message were two to four times more likely to have engaged in health promoting actions, compared to participants in the control group. In contrast, the impact of the non-narrative condition only differed from that of the control group for searching more information about skin cancer.

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Results
<p>Lin et al 2011 (64)</p> <p>Design Systematic review</p> <p>Country Predominantly Australia, Canada, European countries, and the USA</p> <p>Quality Moderate</p>	<p>Objectives Evidence to update U.S. Preventive Services Task Force 2003 recommendation on behavioural counselling to prevent skin cancer.</p> <p>Outcomes and outcome measurement Skin colour measured using skin-reflectance spectrophotometry (change in L scale: measure of lightness or black vs white). Sun protective/exposure behaviours measured by self-report or direct observation. Overall skin protection score (different numbers of items between studies), sun-avoidance score, sunscreen-use score, or tanned at end of the summer or use of high factor sunscreen or indoor tanning sessions</p>	<p>Any age person without current or past skin cancer or pre-cancerous skin lesions The included studies were conducted in adults, adolescents and children"</p> <p>Sample size Counselling: 11 RCTs; 10,037 participants.</p> <p>Age (years) Adults: mean range 38 to 58; Young adults: mean 19 to 20; Children: mean birth to 13;</p> <p>Gender NR</p> <p>Ethnicity NR</p>	<p>Intervention</p> <p>a) Questions on counselling: Interventions ranged from: a single 15-minute self-directed session to several sessions with in-person counselling, phone counselling, or written assessments followed by tailored written feedback in trials of adults; a written self-guided booklet to a brief video and to a 30-minute 1:1 peer-counselling session in trials of adolescents; and brief counselling with in-office computer support to generate printed tailored feedback and counselling integrated into well-child visits in trials of children.</p> <p>b) Key questions on association or harms: Exposure to UV radiation (sun or indoor tanning) or sunscreen use, with description of how exposure was measured.</p> <p>Comparators Comparators were not reported.</p>	<p>Counselling: a brief video intervention with or without an ultraviolet facial photograph produced a moderate decrease in objectively measured skin pigmentation at 12 months (1 RCT, n=133). One trial found no difference in self-reported measures of physical activity.</p> <p>Sun protection/exposure In 3 trials in young adults (897 participants), the appearance-focused counselling intervention successfully reduced indoor tanning among women who had the intention to tan indoors. Although the interventions decreased indoor tanning behaviour by up to 35%, follow-up for these trials was only 3 to 6 months. In 1 trial (819 participants), young adolescents randomly assigned to brief counselling by their primary care providers, coupled with in-office computer support to generate printed tailored feedback, reported both higher composite sun-protection scores and a greater likelihood of avoiding or limiting midday sun exposure or using sunscreen on the face or sun-exposed areas at 24 months than the attention control group. In adults, 4/5 trials (6949 participants) showed that primary care-relevant counselling with tailored feedback (with or without computer support) can modestly affect self-reported sun-protective behaviours, as measured by composite behaviour scores. The differences in scores, although statistically significant, were small, and my not translate into clinically meaningful behaviour change. In the 1 trial (724 participants) that also reported individual types of behaviour change, only the change in use of sunglasses was statistically significant. One trial conducted among siblings of patients with melanoma, which evaluated a similar counselling intervention, did not show any statistically significant changes in sun-protective behaviours. This trial, however, used different</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Results
				<p>outcome measures than the other trials and had only 64% follow-up at 12 months. In 3 trials in young adults (897 participants), the appearance-focused counselling intervention successfully reduced indoor tanning among women who had the intention to tan indoors. Although the interventions decreased indoor tanning behaviour by up to 35%, follow-up for these trials was only 3 to 6 months. In 1 trial (819 participants), young adolescents randomly assigned to brief counselling by their primary care providers, coupled with in-office computer support to generate printed tailored feedback, reported both higher composite sun-protection scores and a greater likelihood of avoiding or limiting midday sun exposure or using sunscreen on the face or sun-exposed areas at 24 months than the attention control group. The other cluster RCT in children, conducted in a large managed care organization, integrated counselling into 4 sequential well-child visits at the discretion of the primary care provider. Parents of newborns (728 participants) in practices randomly assigned to receive the intervention reported higher composite sun-protection scores at 36-month follow-up than those in control practices. The clinical significance of these higher scores, however, is unclear, given the very small numerical differences and the lack of statistically significant differences in 6 of 7 sun-protection questions that contribute to the composite score.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Mahler (2008) (25)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality [-]</p>	<p>Objectives Can the efficacy of an appearance-based sun protection intervention be enhanced by the addition of social norms information.</p> <p>Outcomes and outcome measurement Perceived susceptibility to photoaging measured by an average of 7 items relating to photoaging, each assessed on separate 5-point scales (1 = strongly disagree, 5=strongly agree), Sun protection intentions measured with 18 items (e.g., “I plan to always use a sunscreen with an SPF of at least 15 on my face”) and scored on a 5-point scale (1 = low; 5 = high) Sun protection behaviour. Participants were asked to estimate the number of hours they had sunbathed since their participation.</p>	<p>University undergraduates</p> <p>Sample size 125</p> <p>Age (years) 21.30 (2.73) (range: 18 to 38)</p> <p>Gender 83.2%</p> <p>Ethnicity White: 56.8% Black (African American): 0.80% Hispanic: 4.0% Native American: 0.4% Other: 4.0%. (32% described themselves as Asian)</p> <p>Other information: 36% reported a positive family history of skin cancer. 36% spent ≥ 1 hour sunbathing; 91.4% with ≥ 1 hour incidental sun exposure per week; 28.8% with ≥ 1 tanning salon visit in past year).</p>	<p>Intervention Photoaging information: written information on the incidence and causes of photoaging, and two graphic visual images of wrinkles and age spots. UV photographs: Two facial photos (UV and natural-light) of each person. Participants were told that any dark, freckled, or pitted areas in the UV photo but not in the natural-light photo showed underlying skin damage that would get worse if they continued their current sun exposure levels without additional sun protection. Injunctive norms (IN) information: written information about how to prevent photoaging, including one picture showing the effect of regular sun protection on facial skin, and one showing how much sunscreen to use. Descriptive norms (DN) information: Investigator gave information about the number of their peers who currently use regular sun protection. A 5-minute audiotape in which a researcher</p>	NR	<p>Perceived susceptibility to photoaging Control 3.39 (0.82); Basic 3.94 (0.74); Basic + IN info 4.14 (0.84); Basic + DN info 3.85 (0.64); Basic + DN + IN info 3.77 (0.64)</p> <p>All four interventions had significantly greater perceived susceptibility to photoaging (M = 3.92) relative to control (M = .39), $t(120) = 3.19$, $p < 0.001$, effect size $d = 0.73$. No difference in perceived susceptibility across the 4 interventions.</p> <p>Sun protection intentions Control: 2.80 (0.54); Basic/UV photo 3.01 (0.79); Basic + IN: 3.49 (0.75); Basic + DN: 3.33 (0.82); Basic + IN + DN: 3.28 (0.82).</p> <p>Significantly stronger intentions to use sun protection regularly in the future for participants receiving Basic versus the control group (3.28 vs 2.80; $p < 0.01$, effect size $d = 0.66$), and for participants who received any norms information with Basic, (3.37 vs 3.01 $p < 0.05$, effect size $d = 0.43$).</p> <p>Sun protection behaviour: Control -0.28 (0.44); Basic/UV photo: -0.02 (0.47); Basic + IN: 0.10 (0.57); Basic + DN: -0.03 (0.42); Basic +In + DN: -0.23 (0.41).</p> <p>Basic: participants reported significantly greater sun protection at the 1-month follow-up (M = 0.09) than controls (M=0.28), $t(102) = 3.70$, $p < 0.001$, effect size $d = 0.94$. Receiving either IN or DN further increased sun protection relative to Basic, but not significantly, $t(102) = 1.31$, $p = 0.19$, effect size $d = 0.30$. Those who received Basic+IN+DN reported significantly greater sun protection (M = 0.23) than those who received Basic</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
			<p>moderated a discussion among four college students about sun protection trends was also played, in order to increase the credibility and acceptability of the inflated descriptive norms.</p> <p>Control No UV photo/photoaging information or norms information.</p>		<p>alone (M=0.02) t (102)= 2.29, p = 0.04, effect size d = 0.59, and marginally greater sun protection than those who received only IN or DN (M =0.01), t (102) =1.79, p <0.08, effect size d =0.38.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Mahler (2010) (18)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality [+]</p>	<p>Objectives The impact of adding upward and/or downward social comparison information on the efficacy of an appearance-based sun protection intervention (UV photos and photoaging information).</p> <p>Outcomes and outcome measurement Perceived susceptibility to photoaging measured by 7 questions on effects of sun exposure. All rated on separate 5-point scales (1 = strongly disagree, 5 = strongly agree). Tanning cognitions. Based on tanning attitudes: 5 statements, rated on a 7-point scale (strongly disagree to strongly agree); Prototypes/images: how well 4 adjectives describe a person who 'works' at getting a tan, rated on a 7-point scale (not at all to very); Behavioural willingness: 3 questions based on 2 scenarios, with willingness to engage rated on a 7-point scale (not at all to very willing). Sun protection intentions. 12 items (e.g., "I plan to always use a sunscreen with an SPF of at least 15 on my face."). Each item rated separately on a 5-point scale (1=strongly disagree, 5= strongly agree). Sun exposure. a) intentional exposure: participants estimated</p>	<p>University undergraduates</p> <p>Sample size 126</p> <p>Age (years) 19.9 (2.36) (range: 18 -34)</p> <p>Gender (females) 77%</p> <p>Ethnicity White: 59.5% Black: 0.8% Hispanic: 4.8% Other: 35.0%</p>	<p>Intervention Intervention only (Int): students received their UV photograph and photoaging information (10 minute videotaped slide show showing graphic photos, and describing process of photoaging and how to minimize it). Intervention + Upward condition (Int+UP): students saw the UV photos of others that depicted less skin damage than their own. Intervention + Downward condition (Int+DN): students saw the UV photos of others that depicted more skin damage than their own.</p> <p>Control No intervention.</p>	NR	<p>Perceived susceptibility Control: 3.38 (SD .85) Int: 3.86 (SD .72) Int+DN: 3.83 (SD .75) Int+UP: 3.99 (SD .71) Those who received Int reported greater perceived susceptibility to photoaging (d = 0.74) relative to controls. There were no differences in perceived susceptibility among the three interventions (all P>.18, all d<.21)</p> <p>Tanning cognitions index: (higher z scores more favourable). Measurements from ANOVA adjusted for the baseline values. Control: 0.24 (SD 0.79) Int: -0.24 (0.77) Int+DN: -0.03 (0.75) Int+UP: 0.01 (0.73)</p> <p>Intentions to sun protect: (1=low, 5=high) Measurements from ANOVA adjusted for the baseline values. Control: 3.08 (0.91) Int: 3.93 (0.73) Int+DN: 3.94 (0.54) Int+UP: 4.14 (0.60)</p> <p>Sun exposure index (lower z scores = less exposure): Control: .09 (.68) Int: .02 (.70) Int+DN: -.06 (.86) Int+UP: -.05 (.70). Sun exposure: sun exposure at</p>	<p>Those who received the basic UV photo/photoaging intervention reported less favourable tanning cognitions (d=0 .44), and greater intentions to sun protect (d = 1.32) relative to controls.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
	<p>the number of hours they had sunbathed since their participation.</p> <p>b) and c): incidental exposure weekday and weekend: participants estimated the average number of hours they had spent in the sun while engaged in activities other than sunbathing on a typical weekday and weekend, respectively.</p> <p>All assessments were averaged to produce a sun exposure score.</p> <p>Sun protection. Sun protection score based on several measures: participants were asked (a) whether they had used sunscreen during intentional and incidental exposure, respectively, since the experiment and, if so, (b) the frequency with which they had used sunscreen on their face and body (on scales ranging from 0 to 100%); (c) whether they had purchased any sunscreen since participation in the experiment; (d) the frequency with which they had done each of the following since the experiment: considered buying a wide-brimmed hat, browsed the sunscreen section at a store, discussed sunscreen with a friend, reapplied sunscreen during the day, used a thicker layer of sunscreen than they previously would have (on 5-point scales, 1 = not at all; 5 = very frequently). These responses were</p>				<p>follow-up did not differ as a function of interventions.</p> <p>Sun protection: The basic intervention increased sun protective behaviour during the subsequent 5 weeks relative to controls ($d = .44$), but the addition of downward comparison information completely negated this benefit. Upward comparison information produced sun protection levels that were only slightly (and non-significantly) greater than in the basic intervention condition and, as such, does not appear to be a cost-effective addition.</p>	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
	standardised and averaged to produce a score.					

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Mahler (2013) (26) Design RCT Country USA Quality [-]</p>	<p>Objectives To compare the sun protection practices of US undergraduates from two universities located in climatologically different regions. To explore whether there are regional differences in the efficacy of two validated appearance-based sun protection interventions: UV photography and information about photoaging Outcomes and outcome measurement Perceived susceptibility to photoaging. Average of 7 items relating to photoaging, each assessed on separate 5-point scales (1 = strongly disagree, 5=strongly agree). Self-efficacy for regular sunscreen use. Average response for confidence in motivation to perform 6 activities, each assessed on separate 10-point scale (1 = Certain I could not do, 10=Certain I could do), Sun protection intentions Average of 10 items, each assessed on separate 5-point scales (1 = strongly</p>	<p>University undergraduates Sample size 442 Age (years) California: 19.69 (2.11) (range: 18 to 44). Iowa: 19.42 (1.34) (range: 18 to 30) Gender 62.7% Ethnicity California: White: 42.3% Black: 0.4% Hispanic: 5.4% Other: 51.9%. Iowa: White: 92.0% Black: 2.5% Hispanic: 1.5% Other: 4%.</p>	<p>Intervention (1) UV photo: Two facial photos (UV and natural-light) of each person. Students were told that any dark, freckled, or pitted areas' in the UV photo but not in the natural-light photo showed underlying skin damage that would get worse if they continued their current sun exposure levels without additional sun protection. (2) Photoaging information: photoaging and effective practices for reducing photoaging were presented via a 10-minute videotaped slide show. (3) UV photo plus photoaging information: (1 and 2). Control UV photo, photoaging, both or neither.</p>	<p>Students reported sunscreen use on their face 61.6% while sunbathing and 45.3% of the time during incidental exposure. Sunscreen on their body 49.5% while sunbathing and 29.2% of the time during incidental exposure. Nearly 60% reported spending at least one hour per week sunbathing and 94.1% reported at least 3 hours of incidental sun exposure per week during the previous summer. 14% reported using a tanning bed at least once in the past</p>	<p>Perceived susceptibility to photoaging Univariate analyses: photoaging video vs no video: $F(1, 425) = 13.76, p = .001, \eta = .18$. UV photo vs no UV photo $F(1, 425) = 8.57, p = .004, \eta = .14$. Significantly greater feeling of susceptibility in those viewing a photoaging video or seeing a UV photo compared with those who did not. Self-efficacy for regular sunscreen use MANCOVA results indicated a significant overall effect of each intervention UV photo: $F(5, 421) = 7.40, p < .001$ Photoaging video vs. no photovideo: $F(5, 421) = 8.31, p < .001$. Univariate analysis for UV photo vs. no UV photo: $F(1, 425) = 3.52, p=0.06, \eta =0.09$. Sun protection behaviour Univariate analysis: Photovideo vs no photovideo: $F(1, 425) = 33.40, p<0.001, \eta =0.27$; UV photo vs no UV photo: $F(1, 425) = 3.52, p=0.06, \eta$</p>	<p>Overall effect of each intervention was significant, but no significant interaction overall. Participants who viewed the photoaging video had significantly greater intentions to engage in sun protective behaviour and felt marginally greater self-efficacy for engaging in regular sunscreen use than those who did not. Also, those who viewed their UV photo had significantly greater intentions to engage in sun protective behaviour than those who did not, but no significant difference in self-efficacy for regular sunscreen use. Significant overall location effect for intervention group $F(5, 421) = 3.32, p<0.01$. Participants in Iowa compared with California had significantly lower future sun protection intentions, $F(1, 425) = 7.98, p<0.01, \eta =0.14$ and lower self-efficacy for sunscreen use, $F(1, 425) = 6.42, p=0.01, \eta =0.12$,</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
	<p>disagree, 5=strongly agree), Sun exposure and sun protection behaviours. Participants were asked to indicate the number of hours spent sunbathing per week during the previous summer, and how frequently they had visited a tanning booth during the previous month.</p>			month.	<p>=0.09 for sun protection behaviour; <u>Sunscreen use</u> No significant difference ($p > 0.20$) <u>Sunbathing</u> People who reported higher sunbathing hours at baseline also reported more sunbathing at follow up ($p < .001$). Caucasian students reported more sunbathing than non-Caucasians ($p < .001$). A marginal UV photo effect, $F(1, 321) = 3.09, p < .08, \eta^2 = .10$, demonstrated that students who had seen their UV photo reported less sunbathing than those who had not (z-score Ms = $-.12$ vs. $.02$). No other effects for sunbathing approached significance. <u>Sunbed use</u> Students who reported more sunbed use at baseline also reported more sunbed use across the follow-up assessments ($p < .001$). Caucasians were more likely than non-Caucasians to report sunbed use ($p < .03$). Females tended to report more sunbed use than</p>	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
					<p>males ($p = .08$). Analyses of the index of sun protection behaviour during incidental exposure found that females reported greater sun protection during incidental exposure than males ($p < .001$).</p>	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Makin (2013) (118)</p> <p>Design Telephone surveys</p> <p>Country Australia</p> <p>Quality [+]</p>	<p>Objectives To examine trends in key sun-protection behaviours and sunburn for the Melbourne population from 1987 to 2007, and to examine patterns of change among age groups.</p> <p>Outcomes and outcome measurement Sun protection behaviours: Did you use sunscreen between 11 a.m. and 3 p.m. on Sunday?' Body exposure index (cover afforded to each body part by reported clothing, hat, sunscreen, shade and sunglasses use during the main outdoor activity during peak UVR): range from 0 (full cover) to 1 (no cover). Behaviours during activities on the Sunday prior to the interview were generally used to represent the weekend outcomes. Saturday behaviours were used if the respondent was only outdoors during peak UVR on Saturday. Sunburn 'Did you get at all sunburnt yesterday? What about on Saturday?'</p>	<p>General population.</p> <p>Sample size 8802 interviews</p> <p>Age (years) 14–24, 29%; 25–44, 47%; 45–69, 24%.</p> <p>Gender (female) 52%</p> <p>Ethnicity NR</p>	<p>Telephone survey. Random selection of households with a telephone from residential directories, then using weekly age and gender quotas to identify one participant per household and ensure a balanced representative sample.</p>	<p>1987-1988</p> <p>Sunscreen used: 13.7</p> <p>Mean proportion of the body exposed unprotected: 0.22 (95% CI 0.18–0.25)</p> <p>Odds of being sunburnt: 0.145</p>	<p>2006-2007</p> <p>Sunscreen used: 35.0%</p> <p>There was a rapid improvement in sun-protection behaviours in the initial period, with the odds of respondents using sunscreen increasing steadily from 1987–88 and peaking in 1994–95 [odds ratio (OR) 4.5; 95% CI 2.97–5.52]. Comparisons with the peak levels in 1994–95 showed decreased odds of sunscreen use in the second period in 1999–2000, 2001–02 and 2003–04, but an approach to 1994–95 levels again in 2006–07.</p> <p>Mean proportion of the body exposed unprotected: 0.17 (95% CI 0.12–0.22). The mean proportion of the body exposed unprotected fell consistently from 0.22 in 1987–88 (95% CI 0.18–0.25) to 0.10 in 1994–95 (95% CI 0.05–0.16) but was steady in the second period compared with 1994–95.</p> <p>Odds of being sunburnt: 0.094 The odds of respondents being sunburnt on summer weekends generally decreased compared with baseline in the early period, with the largest reduction reached by 1994–95 (OR 0.53, 95% CI 0.38–0.74). Odds of sunburn continued to be relatively low in the second period with similar incidence to 1994–95 except for an increase in 2003–04 (OR 1.90, 95% CI 1.32–2.74).</p>	<p>69% of respondents were outdoors during peak UVR times on the weekend (in 2006–07 survey)</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Results
<p>Mallett (2012) (100)</p> <p>Design Non-randomised comparative survey in secondary care</p> <p>Country USA</p> <p>Quality [-]</p>	<p>Objectives To evaluate the effects of the ABC intervention on patient outcomes to determine if ABC improves patient satisfaction and immediate intentions to enhance their sun-protective behaviours.</p> <p>Outcomes and outcome measurement Intends to increase sunscreen use; Intends to use sunscreen before outdoor activities.</p>	<p>Adults scheduled to receive a skin examination during their appointment.</p> <p>Sample size 60 patients (60 analysed); 2 research sites (30 per site).</p> <p>Age Not reported</p> <p>Gender (female) 75%</p> <p>Ethnicity NR</p>	<p>Survey of clinic attending adults. Exclusion criteria: (1) psoriasis; (2) complicated visit and/or (3) communication barrier (e.g. mental disability).</p> <p>Intervention ABC</p> <p>Control No intervention.</p>	<p><u>Intends to increase sunscreen use:</u> Intervention 5.14 (1.30); Control 3.17 (1.83), p< 0.001.</p> <p><u>Intends to use sunscreen before outdoor activities:</u> Intervention 5.59 (1.21); Control 4.38 (1.76), p=0.004.</p> <p>Patients in the treatment group reported significantly higher intentions to increase overall sunscreen use and to use sunscreen before outdoor activities compared with the control group</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Manne (2010) (10)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality [++]</p>	<p>Objectives To evaluate the impact of generic print and telephone counseling versus tailored print and telephone counseling interventions on engagement in total cutaneous examination by health provider (TCE), skin self-examination (SSE), and sun protection habits.</p> <p>Outcomes and outcome measurement Frequency of (TCE). Frequency of (SSE) "deliberately and purposefully" in the past year (baseline) or since the last assessment (Time 2, 3). Protection habits: 5-item scale (Glanz, Schoenfeld, Shigaki, & Evensen, 2002) (using sunscreen, wearing a hat, seeking shade, wearing shirt with sleeves, wearing sunglasses). (1 = "never", 5 = "always").</p>	<p>First degree relatives of patients with cutaneous melanoma (parents, siblings or children)</p> <p>Sample size 443 (381 completed time 2 and 384 completed time 3)</p> <p>Age (years) 47.6 (13.2)</p> <p>Gender (female) 63%</p> <p>Ethnicity 98.2% White</p>	<p>Intervention Generic: Three print mailings and one telephone counselling call delivered two weeks after the last mailing. Mailings focused on melanoma, melanoma risk, and TCE and used well recognized public health materials from cancer and dermatology societies. Letters accompanying the mailings recommended each behavioural change. Generic telephone counselling call after the third mailing. During the call, the health educator reviewed the guidelines for SSE, TCE, and sun protection, the steps to performing SSE, how to protect one's skin, and ways to reduce sun exposure. The necessity of having a TCE was reinforced.</p> <p>Comparator Tailored: Three print mailings and one telephone counselling call delivered two weeks after the last mailing. Materials sent were tailored to the individual (e.g. those with blonde or red hair) risk factors. During the tailored counselling call, the educator reviewed the participant's current TCE and SSE status, discussed guidelines, benefits of TCE/SSE, personal risk factors, feelings, motivations, habits, barriers etc.</p>	<p>Frequency of TCE: 0 in both groups</p> <p>Frequency of SSE: generic: mean 0.34% (SD 0.80); Tailored: mean 0.42% (SD 0.86).</p> <p>Protection habits: Generic: 2.8 (0.65) Tailored: 2.8 (0.66).</p>	<p>Frequency of TCE at time 1 and time 2: Generic: 20.7% and 11% Tailored: 32.6% and 22.2%</p> <p>Probability of having a TCE: OR 1.94 (1.39 to 2.72) for tailored vs generic. Those enrolled in the tailored intervention had almost a twofold increased probability of having a TCE ($p < .0001$). Increases in TCE intentions mediated the tailored intervention's effects on TCE</p> <p>Frequency of SSE at time 1 and time 2: Generic: mean 3.8 (SD 17.5) and mean 6.2 (SD 24.4) Tailored: mean 5.6 (SD 24.8) and mean 8.8 (SD 34.9) No significant difference between groups.</p> <p>Protection habits: Generic: time 1 - 3.2 (0.69), time 2 - 3.2 (0.73)</p> <p>Tailored: time 1 - 3.4 (0.76), time 2 - 3.4 (0.79) Treatment effects were in favour of the tailored intervention ($p < .02$). Increases in sun protection intentions mediated effects of the tailored intervention's effect on sun protection.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Midboe (2011) (43) Design RCT Country USA Quality [-]</p>	<p>Objectives To examine interpersonal factors, specifically social support, in the relationship between worry and health decision-making.</p> <p>Outcomes and outcome measurement Sunscreen use intentions. Question “When you go outside for more than 1 hour on a warm, sunny day, how often do you wear sunscreen?”. 5-point scale (1= never to 5 = always), immediately after intervention and after 30 days.</p> <p>Intentions to wear a hat. Question “When you go outside for more than 1 hour on a warm, sunny day, how often do you wear a hat that shades your face, ears and neck?”. 5-point scale (1= never to 5 = always) after intervention and after 30 days Self-reported use of sunscreen at follow-up. Self-reported wearing a hat at follow-up.</p>	<p>Young adult women Sample size 59 Age (years) 18.85 (1.3) (range: 18 -23) Gender (females) 100% Ethnicity White: 100%</p>	<p>Interventions (1) A worry-induction condition. Participants asked to imagine the experience and impact of having skin cancer following receipt of written information on skin cancer and two sets of pictures (normal and UV photos) of young females. (2) A neutral (no worry-induction) condition. (3) A social support (SS)intervention. Experimenter invited participants to look at websites with relevant information on skin cancer for a few minutes and offered to provide contact details should more information be required. After 5 minutes, the experimenter offered to answer questions and gave out the principal researcher’s contact details (4) Neutral (no social support intervention) condition. Information on sun but participants not asked to imagine having skin cancer. Experimenter asked patients to wait in the room for a few minutes but offered to answer any questions prior to leaving. No contact information given.</p>	<p>NR</p>	<p>Sunscreen use intentions, immediately post-intervention (mean, SD): Worry + SS: 4.76 (SD 1.52) Worry + Neutral: 4.81 (1.53) Neutral + SS: 4.67 (1.54) Neutral + Neutral: 4.18 (1.53) (F[3,56] = .53, p = .67, partial $\eta^2=0.03$).</p> <p>At 30 days (mean, SD): Worry + SS: 3.58 (1.79) Worry + Neutral: 3.27 (1.79) Neutral + SS: 3.86 (1.80) Neutral + Neutral: 3.50 (1.79) (F[3,44] = .21, p = .89, partial $\eta^2 = 0.01$). No significant group differences were found at either timepoint.</p> <p>Intentions to wear a hat immediately post-intervention (mean, SD): Worry + SS: 2.31 (SD 1.51) Worry + Neutral: 3.37 (1.53) Neutral + SS: 2.57 (1.54) Neutral + Neutral: 2.57 (1.52) (F[3,44] = .21, p = .89, partial $\eta^2 = 0.01$)</p> <p>At 30 days (mean, SD): Worry + SS: 1.67 (1.42) Worry + Neutral: 2.26 (1.42) Neutral + SS: 2.16 (1.43) Neutral + Neutral: 2.26 (1.42) (F[3,44] = .51, p = .68, partial $\eta^2 = 0.03$) No significant group differences were found at either timepoint.</p> <p>Reported use of sunscreen</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
					<p>Worry + SS: 2.37 (1.53) Worry + Neutral: 1.87 (1.53) Neutral + SS: 2.27 (1.53) Neutral + Neutral: 3.10 (1.53) (F[3,44] = 1.47, p = .24, partial η^2 = .09) No significant group differences were found</p> <p><u>Reported wearing a hat</u> Worry + SS: 1.22 (.92) Worry + Neutral: 1.39 (.92) Neutral + SS: 1.59 (.92) Neutral + Neutral: 1.62 (.92) (F[3,44] = .51, p = .68, partial η^2 = .03) No significant group differences were found.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Moser (2012) (24)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality [-]</p>	<p>Objectives To compare the effects of intervention content eliciting strong emotional responses to visual images showing photoaging and skin cancer, specifically fear and disgust, coupled with a message of self-efficacy and benefits of sun protection (F intervention) with an intervention that did not contain an emotional arousal component (E intervention). These were compared to a control condition that contained an emotional arousal component that elicited emotion unrelated to the threat of skin cancer or photoaging.</p> <p>Outcomes and outcome measurement Perceived susceptibility to photoaging assessed by questionnaire, e.g. If you don't use sun protection, how susceptible do you feel you are to getting age spots? Rated from 1 (not at all) to 6 (very highly). General sun protection questionnaire. Previous week: SPF on</p>	<p>Female undergraduates</p> <p>Sample size 352</p> <p>Age (years) 19.39 (2.34) (range: 18 to 49)</p> <p>Gender (Female) 100%</p> <p>Ethnicity not specified White: 62.4% Black: 5.1% Hispanic: 17.1% Asian: 6.0% Native American: 2.8% Middle Eastern: 1.4% Multiracial: 4.8%. Declined to answer: 1.</p>	<p>Intervention (1) Full emotional arousal plus self-efficacy (F+SE). (a) emotional arousal associated with images of skin cancer and photoaging [4 sets of images: photoaging in younger women and in older women, skin cancers and Moh's surgery] and (b) efficacy (information on UV rays, sun protection factor and benefits of sun) followed by self-efficacy (details on how to apply sunscreen and how to make it a daily habit, and a visualisation exercise based on purchasing and subsequently using sunscreen). (2) Self-efficacy (SE) treatment alone: information on UV rays, sun protection factor and benefits of sun) followed by self-efficacy (details on how to apply sunscreen and how to make it a daily habit, and a visualisation exercise based on purchasing and subsequently using sunscreen). Control A stress management intervention (Con). A visualisation exercise which elicited emotional arousal</p>	<p>Perceived susceptibility to photoaging F+SE: 3.99 (SD 1.34); SE: 4.14 (1.29); Con: 3.85 (1.29). General sun protection F+SE: 3.41 (SD 1.14); SE: 3.33 (1.17); Con: 3.32 (1.17) Previous week: SPF on face F+SE: 3.56 (SD 2.49); SE: 3.58 (2.49); Con: 3.59 (2.41). Previous week: Use of high SPF sunscreen on body F+SE: 1.97 (SD 1.53); SE: 1.95 (1.32); Con: 1.99 (1.53) Previous week: Hat use F+SE: 1.44 (SD 1.11); SE: 1.41 (.96); Con: 1.47 (1.24) Previous week: Wear protective clothes F+SE: 2.24 (SD 1.64); SE: 2.14 (1.44); Con: 2.31 (1.56). Previous week: Shade F+SE: 3.51 (SD 1.76); SE: 3.26 (1.48); Con: 3.31 (1.63). Previous week: Sun exposure F+SE: 7.86 (SD 2.18); SE: 7.49 (2.33); Con: 7.54 (2.32). Previous week: Sunbathing F+SE: 3.57 (SD 3.04);</p>	<p>Perceived susceptibility to photoaging F+SE: 4.59(SE 0 .07); SE: 4.59 (0.11); Con: 4.23(0.08), df (2, 348), F= 6.71, p <0 .001 Pairwise comparisons: F+SE vs SE: p=1.0; F+SE vs Con: p<0.01; SE vs Con: p=0.02</p> <p>General sun protection (at 2 weeks) F+SE: 3.73 (SE .09); SE: 3.55 (SE .14); Con: 3.42 (.09), df (2, 231), F 3.16 p = .04; F+SE vs. SE: p=0.86; F+SE vs. Con: p=0.04; SE vs. Con: p=1.0. F+SE but not SE condition, reported significantly higher scores on the general sun protection scale than those in Con. An examination of the individual behaviours showed that F+SE reported marginally higher sunscreen use on the body (adjusted M = 3.18, SE = .13) than SE (adjusted M = 2.66, SE = .20) (p = .09 in Bonferroni post hoc comparison of the three conditions; p = .03 in a pairwise comparison of F+SE versus SE). F+SE also reported marginally significantly higher attempts to stay in the shade (adjusted M = 3.74, SE = .12) and avoiding the sun (adjusted M = 3.41, SE = .13) than those in Con (adjusted M = 3.37, SE = .12; adjusted M = 2.99, SE = .13, respectively) (p = .08, p = .07 in Bonferroni post hoc comparison, respectively; p = .03, p = .03 in planned comparison of F+SE versus Con,</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
	<p>face (at 2 weeks): When you were outside for this 15 minute period, did you wear sunscreen with sun protection factor 15 or higher on your face? Previous week: Use of high SPF sunscreen on body (at 2 weeks). When you were outside for this 15 minute period, did you wear sunscreen with sun protection factor 15 or higher on every exposed part of your body? Previous week: Hat use (at 2 weeks). When you were outside for this 15 minute period, did you wear a hat to shield your face from the sun? Previous week: Wear protective clothes (at 2 weeks). When you were outside for this 15 minute period, did you cover your body with protective clothing like a long-sleeved shirt and long pants or skirt to shield you from the sun? Previous week: Shade (at 2 weeks). When you were outside for this 15 minute period, did you try to stay in the shade to avoid the sun?</p>		<p>towards taking the test (e.g. over sleeping, arriving late, feeling unprepared due to lack of studying, and not recognizing any of the exam material). Information then given on stress and two stress reduction techniques. Participants also taught to recognize their own symptoms of stress and were given Biodots, (small colour-coded hand thermometers used as a marker of stress).</p>	<p>SE: 3.18 (2.57); Con: 3.56 (2.97).</p>	<p>respectively). There was no significant difference between F+SE and SE. <u>Previous week: SPF on face</u> F+SE: 4.45 (SE .18); SE: 4.25 (.28); Con: 4.07 (.19), df (2, 239), F=1.04, p = 0.36 F+SE vs. SE: p=1.0; F+SE vs. Con: p=0.46; SE vs. Con: p=0.1 . No significant differences between groups. <u>Previous week: Use of high SPF sunscreen on body (two weeks)</u> F+SE: 3.18 (SE .18); SE: 2.71 (.27); Con: 2.82 (.18), df (2, 239), F=1.45, p = 0.24. F+SE vs. SE: p=0.46; F+SE vs. Con: p=0.49; SE vs. Con: p=1.0. No significant differences between groups. <u>Previous week: Hat use</u> F+SE: 1.66 (SE .10); SE: 1.57 (.15); Con: 1.54 (.10), df (2, 239), F=.39, p = 0.68. F+SE vs. SE: p=1.0; F+SE vs. Con: p=1.0; SE vs. Con: p=1.0. No significant differences between groups. <u>Previous week: Wear protective clothes</u> F+SE: 2.65 (SE .14); SE: 2.88 (.21); Con: 2.39 (.14), df (2, 241), F=2.01 p =0.14. F+SE vs. SE: p=1.0; F+SE vs. Con: p=0.57; SE vs. Con: p=0.17. No significant differences between groups. <u>Previous week: Shade</u></p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
	<p>Previous Week: Sun exposure (at 2 weeks). In the past week, approximately how many minutes/hours did you spend in the sunshine? 0 hours/week to more than 25 hours /week.</p> <p>Previous Week: Sunbathing. In the past week, approximately how many minutes/hours did you sunbathe? 0 hours/week to more than 25 hours /week.</p>				<p>F+SE: 4.14 (SE .14); SE: 4.36 (.21); Con: 3.56 (.14); df (2, 242), F=6.76, p = 0.001. F+SE vs. SE: p=1.0; F+SE vs. Con: p=0.01; SE vs. Con: p=0.005. F+SE and SE reported significantly higher rates of staying in the shade than Con. <u>Previous week: Sun exposure</u> F+SE: 6.68 (SE .20); SE: 6.75 (.30); Con: 7.06 (.20), df (2, 241), F=0.97, p = 0.38. F+SE vs. SE: p=1.0; F+SE vs. Con: p=0.54; SE vs. Con: p=1.0. No difference between groups. <u>Previous week: Sunbathing</u> F+SE: 2.56 (SE .21); SE: 3.18 (.34); Con: 3.24 (.22), df (2, 237), F=2.73, p = 0.07. F+SE vs. SE: p=1.0; F+SE vs. Con: p=0.09; SE vs. Con: p=0.35. Marginally significant differences between F+SE and Con on the previous week sunbathing item, with F+SE reporting less sunbathing (adjusted M = 2.56, SE = .21) than those in Con (adjusted M = 3.24, SE = .22) (p = .09 in Bonferroni post hoc comparison, p = .07 in planned comparison of F versus C).</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Nan (2011) (30)</p> <p><u>Design</u> RCT</p> <p><u>Country</u> USA</p> <p><u>Quality</u> [-]</p>	<p><u>Objectives</u> To assess potential interactive effects of incidental affect (positive vs negative) and message framing (gain vs loss) on persuasion in the context of promoting sun protection behaviours.</p> <p><u>Outcomes and outcome measurement</u> Perceived susceptibility to skin cancer and photoaging. Two questions based on health risks from sun exposure. Agreement rated on 7-point scale (1 = not at all likely; 7 = very likely). Responses averaged to give an index of perceived susceptibility. Perceived effectiveness of performing sun protection behaviours. Two questions based on effectiveness of sun protection behaviours. Agreement rated on 7-point scale (1 = not at all likely; 7 = very likely). Responses averaged to give an index of perceived response efficacy. Behavioural intentions Survey: statements to assess intention to adopt sun protection were rated on a 7-point scale (extremely unlikely to extremely likely). An index of overall behavioural intention was calculated.</p>	<p>Undergraduates</p> <p><u>Sample size</u> 152</p> <p><u>Age (years)</u> NR</p> <p><u>Gender (females)</u> NR</p> <p><u>Ethnicity</u> NR</p>	<p><u>Intervention</u> Study involved a 2 X 2 factorial design with no control. Two consecutive 'studies': (1) Incidental affect (defined as a transitory emotion or mood induced by stimuli unrelated to a persuasive message). Participants randomised to either a positive or negative affect group, and asked to recall an event that made them either happy or sad and write about the incident. (2) Framed message: participants randomized to a public service announcement on adopting sun protection behaviour, focusing on either positive (gain-framed) or negative (loss-framed) outcomes.</p>	NR	<p><u>Perceived susceptibility skin cancer and photoaging</u> ANCOVA means (SD): Positive affect/gain frame message: 5.31 (1.1) Positive affect/loss frame message: 5.80 (1.2) Negative affect/gain frame message: 5.83 (1.2) Negative affect/loss frame message: 5.48 (1.1)</p> <p><u>Perceived effectiveness of performing sun protection</u> ANCOVA means (SD): Positive affect/gain frame message: 4.91 (1.4) Positive affect/loss frame message: 5.35 (1.2) Negative affect/gain frame message: 5.45 (1.3) Negative affect/loss frame message: 5.00 (1.5)</p> <p><u>Behavioural intentions</u> ANCOVA means (SD): Positive affect/gain frame message: 5.36 (1.7) Positive affect/loss frame message: 5.68 (1.6) Negative affect/gain frame message: 5.56 (1.6) Negative affect/loss frame message: 4.85 (1.8)</p> <p>No significant main or interactive effects of incidental affect or message framing on behavioural intention.</p>	<p>Incidental affect and message framing interact to influence perceived susceptibility to health risks resulting from sun exposure and perceived response efficacy. The loss-framed message led to greater perceived susceptibility and response efficacy than the gain-framed message in happy participants. There were no differences between loss- and gain-framed messages in SAD participants.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Notebaert (2014) (39)</p> <p>Design RCT</p> <p>Country Australia</p> <p>Quality [-]</p>	<p>Objectives Does inducing a negative rather than a positive interpretation bias for physical threat information enhance worry elicited when viewing a health campaign video warning against melanoma skin cancer, and consequently lead to more adaptive behaviour (sun protection).</p> <p>Outcomes and outcome measurement Sun protection intentions measured by a lost luggage game: the ratio of money participants spent on sun protection items, (versus non-sun items) and proportion of money spent on sun protection items (versus total money spent) served as measures of engagement in sun protective behaviours. Questionnaire, consisting of five questions, gauging to what extent participants intended to engage in 5 different sun protection behaviours when exposed to harmful sunshine in the following summer. Responses rated on a 5-point scale.</p>	<p>Undergraduates with mid-range anxiety levels and low to average melanoma worry.</p> <p>Sample size 40</p> <p>Age (years) 18.4 (1.8)</p> <p>Gender (female) 77.5%</p> <p>Ethnicity NR</p>	<p>Interventions Cognitive bias modification: participants were trained to either adopt a positive or negative interpretation bias using physical threat scenarios. Each scenario comprised 3 sentences which remain emotionally ambiguous until a final word that disambiguates the emotional meaning in either a threatening or benign way. Participants exposed to negative interpretation bias were compared to participants exposed to positive interpretation bias.</p>	NR	<p>Results not reported separately for the two groups. For both proportion of sun expenditure and behavioural intentions, no significant differences were found between groups. Strongest correlation between video-elicited melanoma worry and proportion sun expenditure, $t(39) = 0.42, p < .01$. Non-significant positive correlation between elicited melanoma worry and behavioural intentions (0.23). The more participants increased in melanoma worry because of the video, the more they spent on sun protection in the game afterwards. Video elicited worry was positively correlated with a measure of engagement in sun protection behaviour, suggesting that higher levels of worry do promote adaptive behaviour.</p>	<p>Correlational analyses performed with the two measures of engagement in sun protection (proportion sun expenditure and behavioural intentions) found no significant differences between training groups.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Results	Comments
<p>O'Keefe (2012) (35) Design Systematic review Country NR Quality [low]</p>	<p>Objectives Meta-analysis of relative persuasiveness of gain-framed and loss-framed messages for encouraging skin cancer preventive behaviours. To explore the possible moderating roles of three variables: the advocated action, the basis of the persuasive appeal (i.e. the outcome), and the sex of message recipients. Outcomes and outcome measurement Persuasion was assessed through attitude, behavioural intention, behaviour, and related outcomes.</p>	<p>Majority of participants were undergraduates. Sample size 33 included studies; 4168 participants Age NR Gender (females) NR Ethnicity Study samples predominantly Caucasian.</p>	<p>Intervention Gain-framed appeals in skin cancer prevention. Comparators Loss-framed appeals in skin cancer prevention.</p>	<p>Data combined across attitudinal, intention and behaviour outcomes. Across all 33 studies, random-effects weighted mean correlation for persuasion was -0.020 (95% CI: -0.060 to 0.019 (Z = -1.002, p = 0.316). No significant persuasive advantage for one framing form over the other.</p>	<p>Moderator analysis: Relative persuasiveness of framed appeals was not affected by whether the messages advocated only sunscreen use (12 studies; mean r = -0.013) or other or multiple behaviours (21 studies, mean r = -0.023); (p =0.810).</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Orbell (2008) (52) Design RCT Country UK Quality [+]</p>	<p>Objectives To investigate the interaction of Consideration for Future Consequences Scale (CRC) and temporal framing of messages (positive/negative at different times) on intentions and attitudes towards sunscreen use. Outcomes and outcome measurement Sunscreen use intentions measured using 4 items, rated on 6-point Likert scales.</p>	<p>University students and staff who liked to have a tan. Sample size 121 Age (years) 28.4 (14-61) Gender (female) 56.2% Ethnicity White: 89.3%</p>	<p>Interventions Paper booklet with information about the positive and negative aspects of sunscreen to prevent skin cancer in different temporal presentation. Participants were divided by the median of their responses to the Future Consequences Scale (CRC) into high and low CRC responders. Four groups: Long term (LT) positive consequences and short term (ST) negative consequences in low/high CRC responders, and ST positive consequences and LT negative consequences in low/high CRC responders.</p>	<p>NR</p>	<p>Significant main effect of CRC, $F(4, 114) = 2.93$, $p < 0.05$; High-CRC: mean 5.03 (SD 1.49) Low-CRC: mean 4.36 (SD 1.32), High-CRC group had more positive intentions to use sunscreen, $F(1, 117) = 7.13$, $p < 0.01$. The ST-/LT+ manipulation led to high-CRC individuals being more likely to endorse sunscreen use and low-CRC individuals being less likely to endorse sunscreen. Similarly, the ST+/LT- manipulation led to low-CRC individuals being more likely to endorse sunscreen use and high-CRC individuals less likely to endorse sunscreen use.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Pagoto 2010 (110) Design RCT Country USA Quality [+] Included in one of the SRs.</p>	<p>Objectives To examine the impact of a skin cancer prevention intervention that promoted sunless tanning as a substitute for sunbathing.</p> <p>Outcomes and outcome measurement Sunburn assessed by self-report: the number of times participants reported a red or painful burn that lasted 1 day or longer in the past 2 months using a 6-point scale from 0 (not at all) to 5 (≥5 times). Sunbathing gathered by self-report questionnaire: Participants were asked how much time they spent in the sun with the intention of getting a tan in the past 2 months using a 7-point scale ranging from 0 (never) to 7 (every day). Protective clothing used; Sunscreen used; Sunless tanning. Participants were asked to respond to a series of questions about how often they applied sunscreen; wore a shirt with sleeves, a hat, and sunglasses; and stayed in the shade or under an umbrella in the past 2 months.</p>	<p>Adult female beachgoers. Sample size 250 Age (years) 31.21 (12.36) Gender (female) 100% Ethnicity White: 88.7%; Black 1.7%; Hispanic 4.6%.</p>	<p>Intervention Motivational messages to use sunless tanning as an alternative to UV tanning, instructions for proper use of sunless tanning products, attractive images of women with sunless tans, a free trial of a sunless tanning product, skin cancer education, and UV imaging.</p> <p>Comparators A 10 minutes survey.</p>	<p>Sunburn (mean,SD) Intervention: 0.74 (1.06); Control: 0.71 (0.80). Sunbathing: mean (SD) Intervention: 4.12 (2.57) Control: 4.46 (2.13)</p> <p>Sunless tanning Intervention: 7.50 (19.23) Control: 4.52 (10.34) Sunscreen used Intervention: 2.41 (1.34) Control: 2.41 (1.34)</p> <p>Protective clothing used Intervention: 1.77 (0.87) Control: 1.62 (0.78)</p>	<p>Sunburn at 2 months: Intervention: 0.20 (0.50) Control: 0.45 (0.72), (p<0.05) Sunburn at 1 year: Intervention: 0.43 (0.82) Control: 0.44 (0.66) NS, Sunburn scores in the intervention group reduced by 73% across time (t = -5.51; P < .001) compared with 37% in the control group (t = -2.48; P = .01; Cohen d = 0.31). At 1 year, the interaction was not significant (t = -0.24; P = .81), but participants in both groups reported fewer burns at 1 year relative to baseline (t=-2.57, P<.01). Sunbathing at 2 months: mean (SD) Intervention: 2.77 (2.6); Control: 3.98 (2.42), (p<0.05). Follow up @ 1 year: Sunbathing at 1 year: Intervention: 2.70 (2.61); Control: 3.81 (2.52) (p<0.05). Intervention group reported a 33% decrease in sunbathing (t = -5.12; P = .001) compared with a 10% decrease in the control group (t = -2.28, P = .02; Cohen d = 0.32)</p> <p>At 1 year, intervention group reported a greater decrease in sunbathing (t=-5.07, P<.001) compared with control participants (t=-2.47, P=.01; Cohen d=0.32).</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
					<p><u>Sunless tanning at 1 year</u> Intervention: 15.90 (57.82) Control: 8.08 (25.38) (NS) Participants in the intervention group significantly increased their total annual use of sunless tanning by an average of 8.40 uses ($t = 14.26, P < .001$) compared with the control group, which increased their total annual use by 3.56 uses ($t=2.92, P=.005$).</p> <p><u>Sunscreen used at 2 months</u> Intervention: 1.94 (0.80) Control: 2.21 (1.37), (NS)</p> <p><u>Sunscreen used 1 year</u> Intervention: 2.74 (1.11) Control: 2.60 (1.27) (NS) The time x group interaction did not significantly predict sunscreen use at 2 months ($t = 1.18; P = .24$) or at 1 year ($t = 0.88; P = .38$). However, sunscreen use decreased across time in the groups at 2 months ($t = -2.32; P=.02$) but did not change at 1 year ($t=0.94, P=.35$).</p> <p><u>Protective clothing used at 2 months</u> Intervention: 2.34 (1.33) Control: 1.65 (0.85), $p<0.05$</p> <p><u>Protective clothing used at 1 year</u> Intervention: 1.97 (0.75) Control: 1.85 (0.68) (NS) The intervention group reported a 32% increase in protective clothing use ($t = 2.39, P = .02$) relative to a 2% increase in the control group (t</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
					<p>= -0.69, P = .49; Cohen d = 0.37). At 1 year, the interaction was not significant (t = -0.50; P = .61), but protective clothing use increased across time for all the participants (t = 2.13; P = .03).</p>

Study details	Objectives and outcomes	Participants	Study details	Results
<p>Potente (2011) (101)</p> <p>Design Community online survey</p> <p>Country Australia</p> <p>Quality [+]</p>	<p>Objectives To determine whether entertainment-education strategies could be combined in a creative communication campaign to improve sun protection behaviours.</p> <p>Outcomes and outcome measurement Perceived personal risk of getting skin cancer, peer perceptions of tanning, confidence in their perceived ability to protect themselves from skin cancer by using sun protection methods Participants were asked to what extent they agreed or disagreed with the statement “There is little chance that I’ll ever get skin cancer”; “Most of my friends think that a suntan is a good thing” and “If I regularly protect myself from the sun, I can avoid skin cancer”.</p> <p>Sun protection behaviour (using sunscreen, wearing sunglasses and hats, seeking/getting under shade, and covering up with clothing). Participants were asked: What kind of things, if any, do you do to protect yourself from the sun when outdoors?</p>	<p>Adolescents and young adults.</p> <p>Sample size Recruited: 8250; Analysed: 1588</p> <p>Age (years) 14-24</p> <p>Gender (female) 63% (995)</p> <p>Ethnicity NR</p>	<p>Survey respondents were drawn at random from the research company’s database that comprised over 50,000 Australians recruited randomly every year via door-to-door interviewing.</p>	<p>“There is little chance that I’ll ever get skin cancer”: A greater proportion of the exposed group (51%) ‘disagreed’ or ‘strongly disagreed’ with this than the unexposed group (45%) (p=.01), indicating higher levels of perceived personal risk in the exposed group.</p> <p>“Most of my friends think that a suntan is a good thing” : 24% of the exposed group ‘disagreed’ or ‘strongly disagreed’ with this vs. 25% (p=.691) of the unexposed group.</p> <p>“If I regularly protect myself from the sun, I can avoid skin cancer”: a greater proportion of the exposed group (83%) ‘agreed’ or ‘strongly agreed’ than the unexposed group (77%) (p=.004).</p> <p>There was a significant difference in perceived personal risk of getting skin cancer between the two groups. There were no significant differences in peer perceptions of tanning. Exposed group had greater confidence in their perceived ability to protect themselves from skin cancer by using sun protection methods.</p> <p>A greater proportion of the exposed group (88%) reported using sunscreen than the unexposed group (84%) (p=.02). Greater proportions of the exposed groups reported use of hats (42% versus 37%) (p=.03) and sun-protective clothing (32% versus 27%) (p=.04), compared to the unexposed groups. There were no significant differences in reported use of sunglasses or seeking shade to reduce sun exposure. There were significant differences in self-reported sun protection behaviour.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
Prentice-Dunn (2009) (37) Design RCT Country USA Quality [+] 	Objectives To examine the usefulness of the stage of change model and protection motivation theory (PMT) in creating brief persuasive appeals to promote healthy sun-behaviour. To target perceptions of vulnerability to sunburn and its effects in two preaction stages of change. Outcomes and outcome measurement Behavioural intentions measured by questionnaire with 7 items (10-point Likert) about avoiding intentional sunbathing, wearing protective clothing and hats and using sunscreen of at least SPF 15 when exposure to the sun is necessary. Assessed immediately after intervention and after 10 days.	Female undergraduates Sample size 254 Age (years) NR Gender (female) 100% Ethnicity White: 100%	Intervention Participants read one of four essays that manipulated the level of threat and coping appraisal. The high threat essay contained graphic photos and emphasized the detrimental effects of the sun on appearance, increasing rates of skin cancer in younger people and the changing norms of beauty to a lighter skin tone. The low threat essay contained innocuous images and minimized these concerns, offering positive information about the sun. The high coping essay focused on the effectiveness of eliminating sunbathing and using sunscreen in avoiding skin cancer and damaged skin, and the ease of doing this. The low coping essay focused on the equivocal data regarding the effectiveness of sunscreen, its inconvenience and the practical difficulties involved in severely curtailing intentional and unintentional sun exposure.	NR	Fewer intentions to adopt precautionary measures with pre-contemplators than contemplators ($F = 25.39$; $p < 0.0001$). Both high threat appraisal information and high coping appraisal essays produced higher intentions than their low equivalents ($F = 92.32$, $p < 0.0001$ and $F = 5.84$; $p < 0.02$, respectively). Threat appraisal, coping appraisal and stage of change essay had effect sizes (eta squared) of 0.28, 0.02 and 0.10, respectively. Both pre-contemplators and contemplators reported greater intentions to take sun protective measures after reading either the high threat appraisal information or the high coping appraisal information	Results suggest that the brief message format commonly encountered in daily life is unlikely to trigger immediate action in most people. Protection motivation theory in combination with the stages of change model may be useful in promoting healthier sun behaviour. Shaping one's perceptions of threat and coping resources is sufficient to move many individuals to the next stage of change.

Study details	Objectives and outcomes	Participants	Study methods	Baseline	Results
<p>Quereux (2009) (91)</p> <p>Design Non-randomised comparative open control study</p> <p>Country France</p> <p>Quality [+]</p>	<p>Objectives To assess the impact of an educational programme on both children's knowledge and behaviour towards the sun.</p> <p>Outcomes and outcome measurement Knowledge of risks (e.g. when is sun strongest?) assessed by a score depending on whether the teacher had decided to participate in the 'to live with the sun' programme. Sun protection (e.g. shade, sunscreen, hat, T-shirt) measured by a sun protection habits score.</p>	<p>Primary school children.</p> <p>Sample size 13 schools; 1 class per school; Intervention: 120 children Control: 162</p> <p>Age (years) 8 – 11.</p> <p>Gender (females) Intervention: 1:1 Control group: 1:3</p> <p>Ethnicity NR</p>	<p>Teacher decided whether or not to teach using "to live with the sun" programme. Results assessed by self-administrated and standardised questionnaire.</p>	<p>Knowledge score Intervention: 6.07; Control: 6.02, (NS)</p> <p>Sun protection habit score Intervention: 5.26, Control: 5.7, (NS)</p>	<p>Knowledge score at 6 months Intervention: 7.66; Control: 6.77, p<0.0001</p> <p>Sun protection habit score Intervention: 5.68, Control: 5.86 (NS)</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
Rat (2014) (13) Design Cluster RCT Country France Quality [+]	Objectives To assess the effect on patient prevention behaviours of a targeted intervention to reduce the risk and increase the early detection of melanoma. Outcomes and outcome measurement Correctly knew they had an elevated risk of melanoma measured by self-reported questionnaire. Worry about developing melanoma: Telephone questionnaire using items based on WHO recommendation. Sustained a sunburn in the past summer: self report. Sunbathed in past year: self report Had a session in tanning bed: self report Took protective actions during the most recent exposure: self report	General practitioners (GPs) and patients at elevated risk of melanoma. Sample size 20 GPs. Intervention; 97 patients; Control: 76. Age (years) Intervention; 43.6 ± 17.1; Control: 42.8 ± 14.6 Gender (female) 76% Ethnicity NR	Intervention GPs used SAMScore risk calculator on a server using an individual password. During the consultation, the GP entered each patient's responses to the 7 questions (phototype, freckling tendency, number of moles, residence in a country with strong sunshine, severe sunburn during infancy, personal history of melanoma, and family history of melanoma). The calculator integrated the risk factors using the SAMScore algorithm and generated an 'at elevated risk' or 'not' for melanoma. All patients identified as having elevated risk received a total skin examination, the GP counselled the patient, and gave them the information leaflet detailing primary and secondary prevention measures. Control: GPs undertook a conventional public health campaign: displaying a poster in the waiting room, providing information leaflets on melanoma from French National Cancer Institute, and printed SAMScore questionnaires listing 7 risk factors for melanoma in the waiting room. They did not have access to SAMScore to interpret the risk factors, and therefore did not have access to the patient's dichotomous risk status. The GPs performed skin examinations only if they decided they were necessary.	NR	Knew they were at elevated risk of melanoma Intervention: 69/97 (71%); Control group: 32/76 (42%), (p=0.002) Worry about developing melanoma: Intervention: 28% Control: 18.4%, (p=0.16) Further GP contact: Intervention: 15.5%; Control: 9.2% (p=0.23) Sustained sunburn in past summer Intervention: 26/97 (27%); Control: 23/76 (30%), (p=0.42 NS) Sunbathed in past year Intervention: 24/97 (25%); Control: 31/76	Intervention group were more likely to correctly know that they had an elevated risk of melanoma and after adjustment for age, sex and education level, knowledge of the risk factors was significantly higher in the intervention group for 4 items. Non-significant trend whereby a greater proportion of patients in the intervention group worried about developing melanoma and to consult their practitioner again to discuss the disease.

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
					<p>(41%), (p=0.04). <u>Had a sunbed tanning session</u> Intervention: 10/97 (10%); Control: 5/76 (7%), (p=0.069) <u>Took protective actions during most recent exposure</u> Intervention 65/97 (67%); Control 42/76 (55%), (p=0.06).</p>	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Reid (2011) (48)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality [-]</p>	<p>Objectives Is the influence of injunctive norms on changes in health behaviours mediated by changes in attitudes. To examine the role of identification with the social group as a moderator of the relationship of injunctive norms to intentions and behaviour.</p> <p>Outcomes and outcome measurement Sunbathing intentions measured by questionnaire agreements with four statements, rated on a 6-point scale (strongly disagree to strongly agree). Sun protection intentions measured in the same way.</p>	<p>Adult women</p> <p>Sample size 316</p> <p>Age (years) 26-79</p> <p>Gender (female) 100%</p> <p>Ethnicity White: 94% Black: 0.90% Hispanic: 2%</p>	<p>Intervention Standard of care plus personalized normative feedback (NFB+info). Standard of care was a one-page, American Academy of Dermatology flyer detailing precautions for protecting one's skin during sun exposure. Personalised normative feedback was an additional flyer that communicated both the true injunctive norms for sunbathing and sun protection observed among the sample and for each participant's own perceptions of these same norms, both assessed at the same time.</p> <p>Comparators Standard of care (Info).</p>	<p>Sunbathing intentions: NFB + info: 2.82, Info: 2.68.</p> <p>Sun protection intentions NFB + info: 4.43; Info: 4.54.</p>	<p>Sunbathing intentions at Time 3: FB + Info: 2.70; Info: 2.33, d=0.13 No effects were observed of the intervention on intention to sunbathe.</p> <p>Sun protection intentions at time 3: NFB + Info: 4.64; Info: 4.38, d=0.35 Greater intentions to sun protect were reported among participants in the NFB+info at both Time 2 and Time 3. The intervention significantly influenced a single attitudinal measure, the belief that protecting one's skin is good.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Reid (2013) (46)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality [+]</p>	<p>Objectives To examine the utility of correcting misperceptions of injunctive norms for improving sun protection and whether changes in attitudes mediated the injunctive norm-intention relationship.</p> <p>Outcomes and outcome measurement Attitude towards sun protection measured by questionnaire, 7-point scale (1 = extremely bad to 7 = extremely good). Injunctive norms: "Typical women's" views towards protection measured on a 6-item injunctive norms scale. Sunscreen use intentions measured by 4 items on a 6-point scale (1 = strongly disagree; 6 = strongly agree). Intentions for sun protection (post intervention and after 4 weeks follow up).</p>	<p>Adult women</p> <p>Sample size 189</p> <p>Age (years) 37-77</p> <p>Gender (female) 100%</p> <p>Ethnicity White: 94%</p>	<p>Intervention Information (standard of care) + personalised normative feedback (PNF). The personalised normative sheet compared the average true injunctive norms for tanning and sun protection observed among the sample at baseline and the women's own perceptions of the norm items.</p> <p>Control Information (standard of care).</p>	<p>Attitude towards sun protection PNF: 6.39; Control: 6.49</p> <p>Typical women's views towards protection PNF: 4.02; Control: 3.95</p> <p>Sunscreen use intentions PNF: 4.52; Control: 4.60</p> <p>Intentions PNF group: 4.54 Control group: 4.55</p> <p>Facial sun protection PNF group: 3.63 Control group: 3.44</p> <p>Body sun protection PNF group: 3.32 Control group: 3.35</p>	<p>Attitude towards sun protection (Post-test mean): PNF: 6.53; Control: 6.36.</p> <p>Typical women's views towards protection (Post-test mean) PNF: 4.64; Control: 4.21.</p> <p>Moderate to large influence of PNF on changes in injunctive norms. Compared with the control, the PNF believed the injunctive norms favouring sun protection to be stronger.</p> <p>Sunscreen use intentions (Post-test means) PNF: 4.71; Control: 4.54</p> <p>Follow-up means: PNF: 4.65 Follow-up Control: 4.38</p> <p>PNF participants reported more favourable sun protection intentions than the controls, both post-test and at 4-week follow-up.</p> <p>Intentions for sun protection (post intervention): PNF: 4.71 Control: 4.54</p> <p>Facial sun protection: PNF: 4.31 Control: 3.95</p> <p>Body sun protection PNF: 3.52 Control: 3.56</p>	<p>PNF participants reported more favourable sun protection attitudes and intentions at posttest than controls. At 4-week follow-up, PNF participants reported greater intentions to sun protect and greater facial sun protection.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
	Self-reported sun protection behaviour (facial and body protection) measured by questionnaire.					

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Results
<p>Reinau (2013) (12)</p> <p>Design SR</p> <p>Country North America (27), Europe (11), Australia/New Zealand (10), Israel (2), Brazil (1) and Japan (1). Knowledge outcomes: USA, Australia and Turkey only.</p> <p>Quality [low]</p>	<p>Objectives Overview of outdoor workers' sun-related knowledge, attitudes and protective behaviours and to evaluate the effectiveness of sun-safety education programmes in outdoor occupational settings.</p> <p>Outcomes and outcome measurement Sun-related knowledge (not specified) possibly measured through questionnaire, diary and telephone interview. Sun protection behaviour possibly measured through questionnaire, diary, telephone interview, direct observation, camera, spectrophotometer. Sunburn possibly measured through questionnaire or diary.</p>	<p>Outdoor workers: agricultural workers/farmers (15 studies), construction/road workers (13 studies) and aquatic personnel (7 studies).</p> <p>Sample size 50 included studies. 7 RCTs reported knowledge outcomes, with sample sizes from 30-194 participants.</p> <p>Age (years) 7 knowledge outcome studies: 18 and older. 3 studies of young adults: mean 20-21. 4 studies of middle-aged adults: mean age 40-47.</p> <p>Gender (female) Most studies were of mixed gender.</p> <p>Ethnicity NR.</p>	<p>Interventions reviewed Educational lectures and videos; Information brochures; Posters; Logos; Skin and eye examinations; Sun-protective gear; UV photo of the face; Interactive tasks.</p>	<p>Few data were provided in the table of included studies: significance and trend were reported. Seven interventional studies assessed sun-related knowledge (not specified). Four found a statistically significant improvement after the intervention.</p> <p>Eight interventional studies assessed attitudes towards skin cancer, sun protection and suntan. One study reported a significant positive short-term effect of an education programme.</p> <p>Sun protection behaviour: 13/16 interventional studies, significant improvements of at least one of the sun-protective behaviours were observed (in two additional studies there was a similar, but non-significant trend). 6 studies reported positive long-term effects of 12 months or more. Most favourable changes were found for the use of sunscreen.</p> <p>Sunburn: 4/4 studies showed a significant decrease in incidence rates after the intervention.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Reynolds (2008) (53) Design RCT Country USA Quality [-]</p>	<p>Objectives To assess the effectiveness of tailored and non-tailored print communications delivered by mail to young adolescents and their parents who were also participating in an evaluation of an in-school intervention. Communications promoted sun protection use and sun avoidance, and fostered family communication and environmental change strategies.</p> <p>Outcomes and outcome measurement Self-efficacy for sun protection use. Children: questionnaire using 3-point (1 = not sure; 3 = sure) items linked to curriculum. Parents: questionnaire with seven 5-point items (strongly disagree to strongly agree) relating to self-efficacy expectations for actions taken to protect their children. Use of shade - limiting exposure. Sun protection score measured by questionnaire Sunburn rate measured by questionnaire</p>	<p>Secondary school pupils Sample size 599 Age (years) 11-15 Gender (females) 57.9% Ethnicity White: 81.3% Black: 6.6% Hispanic: 18.8% American Indian: 5.9% Asian: 4.6% Native Hawaiian</p>	<p>Intervention Exposure to a summer programme delivered to both adolescents and parents using cover letters, Sun Scoop newsletters (for parents), Summer Raze newsletters (for adolescents), and small gifts to enable adolescents to practice the recommended sun protection.</p> <p>Comparators No summer programme.</p>	<p>NR</p>	<p><u>Self-efficacy for sun protection use</u> No significant difference between those who received the summer programme and those who did not in either parents or children (data for associations not reported). <u>Propensity for children to wear sunglasses (parents)</u> F=4.07, p<0.05. <u>Use of shade and sun protection score</u> No significant difference these outcomes for adolescents or their parents (summer programme vs no summer programme). No significant difference in the sunburn rate (summer programme vs no summer programme - main effect).</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Roberts (2009) (56) Design RCT Country USA Quality [+] Included in one of the SRs.</p>	<p>Objectives To evaluate the efficacy of two interventions to reduce UV exposure in college students prior to an opportunity for high-intensity exposure: a community-based informational campaign with or without a cognitive-behavioural small group intervention.</p> <p>Outcomes and outcome measurement Attitudes and beliefs towards sun protection: 29 items assessed using the Skin Cancer Attitudes and Beliefs (SCAB) Scale (4- or 5-point Likert scales). Attitudes and beliefs towards sun exposure: 28 items assessed using the SCAB scale (as before). Attitudes and beliefs towards sunscreen: 10 items assessed using the SCAB scale (as before). Intentions: perform skin examination, have a dermatological examination, use sunscreen. Survey responses assessed using a 5-point Likert scale. Skin cancer knowledge. Skin Cancer Knowledge Scale: 27 items. Skin colour assessed by independent raters.</p>	<p>Undergraduates Sample size 61 Age (years) 20.6 Gender (female) 73% Ethnicity White: 100%</p>	<p>Intervention Community-based informational campaign + cognitive behavioural small group intervention.</p> <p>Control Community based informational campaign only.</p>	<p><u>Attitudes and beliefs towards sun protection, Mean(SD)</u> Intervention: 98.1 (12.9) Control: 99.9 (16.9)</p> <p><u>Attitudes and beliefs towards sun exposure, Mean(SD)</u> Intervention: 89.3 (16.8) Control: 87.7 (19.2)</p> <p><u>Attitudes and beliefs towards sunscreen use, Mean(SD)</u> Intervention: 21.8 (6.9) Control: 22.9 (7.2)</p> <p><u>Intention to have a dermatological examination:</u> Intervention: 57.7% Control: 67.3%</p> <p><u>Skin Cancer Knowledge Scale Means (SDs):</u> Intervention: 106.7 (10.4); Control: 107.9 (10.7)</p> <p><u>Skin colour: means (SDs)</u> Intervention: 4.9 (2.3) Control: 5.0 (2.2)</p> <p><u>Tanning levels (means (SDs):</u> Intervention: 0.9 (1.0) Control: 1.0 (0.9)</p> <p><u>Sun protection behaviour</u> intervention: 35.8 (6.6) Control: 35.7 (8.8)</p>	<p><u>Attitudes and beliefs towards sun protection, Mean(SD)</u> Intervention: 104.5 (15.7) Control: 98.3 (15.6)</p> <p><u>Attitudes and beliefs towards sun exposure, Mean(SD)</u> Intervention: 87.7 (17.2) Control: 88.6 (19.5)</p> <p><u>Attitudes and beliefs towards sunscreen use, Mean(SD)</u> Intervention: 20.8 (6.1) Control: 22.7 (7.5)</p> <p><u>Intention to see dermatologist:</u> Intervention: 69.9% Control: 65.2%, OR 1.68, (95% CI: 1.16 to 2.44), intervention vs control. Means (SDs): Combination Intervention: 115.6 (7.9); Control: 106.8 (14.8)</p> <p>There were no significant main effects. A significant Group x Time effect, $F(2, 79) = 10.6, p < .0001$, indicated that the combination group exhibited more knowledge at the post-intervention assessment than the Control ($d = 1.19$). Skin colour: Combination Intervention:</p>	<p>There were no significant main effects. There was a significant group by time effect with combination group members increasing their scores on the sun protection benefits subscale of the SCAB over time. Intervention group reported greater increases in intentions to have a dermatological examination. Significant main effects for time indicated that all groups exhibited darker skin colour, $F(1, 79) = 163.25, p < .0001$, and higher tan levels, $F(1, 79) = 51.04, p < 0.0001$, from the pre-intervention to post-intervention assessments. There were no other significant effects. The combination group reported more protective clothing use than did the Control, $F(2, 79) = 3.60, p < .05; d = .69$. There were no other significant differences.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
	<p>Tanning levels assessed by independent raters. Sun protection behaviour. Self-reported questionnaire.</p> <p>Measures on the Sun Diary (total and peak exposure, sunscreen days, sunburn days, clothing days). Questionnaire: self report.</p>			<p><u>Sunscreen days</u> NR</p> <p><u>Clothing (days):</u> NR</p>	<p>7.5 (2.3) Control: 8.2 (2.6)</p> <p><u>Skin Cancer Knowledge Scale Means (SDs):</u> Intervention: 115.6 (7.9); Control: 106.8 (14.8)</p> <p><u>Skin colour: means (SDs)</u> Intervention: 7.5 (2.3) Control: 8.2 (2.6)</p> <p><u>Tanning levels:</u> Intervention: 1.3 (0.9) Control: 1.7 (0.9)</p> <p><u>Sun protection behaviour:</u> Intervention: 36.9 (7.4) Control: 34.1 (8.5)</p> <p><u>Sunscreen (days):</u> Intervention: 2.4 (2.0) Control: 1.8 (2.2)</p> <p><u>Clothing (days):</u> Intervention: 4.5 (3.4) Control: 3.0 (2.9)</p>	

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<p>Roberts (2011) (16)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality _[-]</p>	<p>Objectives To examine comparative optimism for skin cancer (the belief that one is at lower risk for skin cancer than one's peers) among adolescents in two age groups: 11- and 12-year-olds versus 13- and 14-year-olds. Is optimism enhanced when adolescents at lower relative risk (i.e., non-tanners) were exposed to higher-risk comparison targets (photos of tanned models) and was this effect moderated by age.</p> <p>Outcomes and outcome measurement Comparative optimism for risk of skin cancer measured by questionnaire. Scale of 1 (much less likely) to 5 (much more likely) on likelihood of getting skin cancer when older compared to other children their age and gender. Attractiveness of tan: Participants asked to rate the attractiveness of a person in a photo on a scale of 1(not attractive) to 5 (very attractive).</p>	<p>Adolescents</p> <p>Sample size 211</p> <p>Age (years) 12.77 (0.75) (11-14)</p> <p>Gender (female) 68%</p> <p>Ethnicity White: 76% Other: 24%</p>	<p>Interventions A packet containing a questionnaire and a randomly assigned single photo (head shot) of an older, naturally fair-skinned adolescent model (male or female), or a photo where the model had been computer-morphed to look more tanned. Thus, students in the "pale-target" condition viewed models that were identical to those in the "tan-target" condition on all aspects except skin tone.</p>	<p>Overall mean comparative optimism 2.38 (SD 1.04), significantly below scale midpoint of 3 ($p < 0.001$). Mid-adolescent non-tanning students in the tan-target condition were more optimistic than those in the pale-target condition ($p = 0.001$). Students, as a group, were comparatively optimistic about their likelihood of developing skin cancer.</p> <p>The relation between social comparison and comparative optimism develops with age, as only the mid-adolescent students showed evidence of making a self-to-target comparison. Models were rated as moderately attractive ($M = 3.55$, $SD = 0.94$). ANOVA (gender of students and models gender controlled for): females rated targets as more attractive than did males, $F(1, 194) = 3.99$, $p = 0.05$, partial eta-squared = 0.02. No other factors significant.</p> <p>Simple-effects analyses: mid adolescent non tanning students: tan-target vs pale target ($F(1, 50) = 13.27$, $p = 0.001$, eta-squared = 0.21). Females rated the targets as more attractive than the males. Among mid-adolescent non-tanning students, those in the tan-target condition were more optimistic than those in the pale-target condition. Perceived attractiveness was not significantly associated with comparative optimism ($p = 0.33$). Target condition had no effect on the comparative optimism of the mid-adolescent tanning students; the early adolescent tanning students; or the early adolescent non-tanning students (all $p > 0.23$).</p>

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Robinson 2013 (65) <u>Design</u> RCT <u>Country</u> Australia <u>Quality</u> [-]	<u>Objectives</u> To investigate the relationship of normative constructs and image norms to sun-protective intentions among young adult females playing recreational sport and at risk of repeated sun exposure. <u>Outcomes and outcome measurement</u> Changes in intentions to engage in sun protection and sun protection behaviours. 2 separate questions on a questionnaire.	Female netball players. <u>Sample size</u> 100 <u>Age</u> (17 to 35) <u>Gender</u> 100% female <u>Ethnicity</u> NR	<u>Intervention</u> Supportive group norms: participants studied bar graphs and testimonial statements which indicated that recreational sportswomen engaged in a high level of sun protective behaviour, whereas non-sporting women engaged in low levels of sun-protective behaviour. <u>Control</u> Participants examined one of two colour pictures of a recreational sportswoman which had been manipulated by Photoshop 6.0 to make the model sportswoman appear tanned. Participants then described the image on a series of six 7-point bipolar scales (e.g., fit/unfit, healthy/unhealthy), including a measure of tannedness(1 = not tanned to 7 = tanned).	Regression analyses – baseline measurements not clear.	Results suggested that intentions to engage in sun protection behaviour at baseline were not significantly related to post intervention behaviour but intentions AFTER the intervention related to post intervention behaviour. No other significant findings.

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Results
<p>Rodrigues 2013 (75) Design Systematic review Country USA, Canada, France, Australia, UK. Quality [high]</p> <p>Also reported in Rodrigues et al. A systematic review of interventions to promote sun protective behaviours in recreational settings. Psychol Health 2010;25:317-18 (meeting abstract) [#12501]</p>	<p>Objectives Efficacy of skin cancer prevention interventions designed to promote sun- protective behaviours in recreational/tourist settings.</p> <p>Outcomes and outcome measurement Sun-Protective Behaviour Indices. Majority of studies used self-reports and/or direct observation methods to assess sun-protective behaviours. Results from comparable studies were pooled to compute weighted ORs and weighted SMDs. Sun-Protective Behaviour Indices SMD with cross study heterogeneity (chi-squared and I² (squared))</p> <p>Wearing protective clothing (Hat or sunglasses use): SMD, odds ratios (OR).</p> <p>Sunscreen Use; SMD with cross study heterogeneity (chi-squared).</p> <p>Protection by Shade: SMDs - cross study heterogeneity(chi-squared and I²).</p> <p>Sun-Exposure: SMD with cross study heterogeneity (chi-squared and I²).</p> <p>Sunburn: In most studies, sunburn assessment ranged from asking about frequency of occurrence to asking whether participants experienced any sunburn during</p>	<p>Adults, children, outdoor staff, ski outdoor staff, group leaders of a 'Summer Fun Programme' and aquatics staff</p> <p>Sample size 30,794 participants (mean sample size 1,534.4; range: 27 to 12,385).</p> <p>Age (years) 25.9 (SD = 13.1), (6.6 to 39.3).</p> <p>Gender NR</p> <p>Ethnicity White (unclear whether range 57.2% to 100% Caucasian is across all studies or all but two studies that included mainly other ethnic backgrounds).</p>	<p>Intervention Most studies examined the efficacy of multi-component interventions involving a mix of educational and environmental components. Other interventions were described as community-based environmental/policy changes and educational/informational strategies. Duration of interventions ranged from time to read a leaflet to up to 3 years. Majority of studies (n=17) had short-term follow-up (1 week to 6 months; two studies reported long-term follow-up (12-24 months).</p>	<p>Sun-Protective Behaviour Indices (change in sun-protective behaviours): Overall: SMD 0.12 (95 % CI: 0.04; 0.21, I² = 69% and chi-squared = 35.32 (df = 11, p<0.001)). Interventions had a significant effect on sun-protective behaviour with high heterogeneity. Subgroup analysis - children: SMD 0.19 (95 % CI = 0.06; 0.32) (I² = 54% and chi-squared = 6.51 (df =3, p=0.09)). Subgroup analysis - adults: SMD 0.09 (95 % CI = -0.03; 0.20) (I² = 73% and chi-squared = 26.13 (df =7, p<0.001)).</p> <p>While differences between adults and younger participants were not significant, meta-analysis by type of participants shows that interventions targeting children had a significant effect on sun-protective behaviours.</p> <p>For adults, the comparison was not significant</p> <p>Protective Clothing Wearing (change in use of protective clothing)</p> <p>Dichotomous outcomes Subgroup analysis - adults: NR; children: Hat Use: OR = 0.74 (95 % CI = 0.36; 1.52). Sunglasses use: OR = 1.36 (95 % CI = 0.72, 2.55)</p> <p>Continuous outcomes Subgroup analysis - children: Protective clothing: SMD = 0.05 (95 % CI = -0.07; 0.17). Hat use: 0.08 (95 % CI = -0.01; 0.16). Shirt use: SMD = 0.02 (95 % CI = -0.07, 0.11). Trousers use: SMD = 0.05 (95 % CI = -0.03; 0.13). Sunglasses use: SMD = 0.04 (95 % CI = -0.10; 0.17).</p> <p>Subgroup analysis - adults: Protective clothing: SMD -0.12 (95 % CI = -0.33; 0.08).</p>

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	<p>the intervention period. Number of self-reported sun burns: SMD or OR.</p> <p>Skin Colour: changes in skin colour assessed using spectrophotometry, colorimetry and observational method.</p>			<p>Hat use: SMD = -0.03 (95 % CI = -0.15; 0.10). Shirt use: SMD = 0.02 (95 % CI = -0.10; 0.15). Sunglasses use: SMD = -0.13 (95 % CI = -0.37; 0.10)</p> <p>No evidence for the efficacy of interventions aiming at increasing protective clothing.</p> <p><u>Change in Sunscreen Use</u></p> <p>Continuous measures</p> <p>Overall: SMD = 0.05(95 % CI = -0.01; 0.12) (I^2 = 47% and chi-squared = 20.80 (df = 11, p = 0.04)). Subgroup analysis - adults: SMD = 0.03 (95 % CI = -0.06; 0.12) (I^2 = 57% and chi-squared = 18.50 (df = 8, p = 0.02)). Subgroup analysis - children: SMD = 0.11 (95 % CI = -0.02; 0.19) (I^2 = 0% and chi-squared 0.25 (df = 2, p = 0.88)). (NB: values taken from fig 3a - in the text values are different and may be misreported)</p> <p>Dichotomous measures</p> <p>Subgroup analysis - children: OR = 3.58 (95 % CI = 1.56; 8.23) (I^2 = 83% chi-squared = 5.88 (df = 1, p = 0.02))</p> <p>Overall: SMD = 0.01 (95 % CI = -0.08; 0.09) (I^2 = 49% and chi-squared = 9.72 (df = 5, p = 0.08)). Subgroup analysis - adults: SMD = 0.01 (95 % CI = -0.08; 0.10) (I^2 = 30% and chi-squared = 4.28 (df = 3, p = 0.23)). Subgroup analysis - children: SMD = 0.02 (95 % CI = -0.19; 0.22) (I^2 = 81% and chi-squared 5.31 (df = 1, p = 0.02)).</p> <p>Continuous data:</p> <p>Overall: SMD = -0.11 (95% CI = -0.18; -0.03) (I^2 = 55% and chi squared = 9.69 11.12 (df = 4, df=5, p = 0.05)). Subgroup analysis - adults SMD = -0.10 (95% CI = -0.19; -0.01) (heterogeneity I^2 = 59% and chi-squared = 9.69 (df = 4, p = 0.05)).</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Results
				<p>Subgroup analysis - children (1 study): SMD = -0.15 (95% CI = -0.29; -0.02) with no appreciable heterogeneity.</p> <p>Dichotomous data:</p> <p>Overall / subgroup adults (identical results; no apparent studies of children): OR = 0.89 (95% CI = 0.72; 1.10) ($I^2 = 19\%$ and chi-squared = 1.23 (df = 1, p = 0.27)).</p> <p><u>Change in skin colour</u> Numerical data reported; no significant effect of the intervention</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Results at 2 years
<p>Roetzheim 2011 (77) Two year data are reported in Hunter [89]</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality [-]</p>	<p>Objectives To assess year-2 results from a cluster randomized trial promoting hat use at schools.</p> <p>Outcomes and outcome measurement Change in observed hat use at school (any type of hat) through direct observation. Tanning: Skin pigmentation (melanin index, range 0%–100%) was repeatedly measured on the forehead using a DermaSpectrometer. Naevi were assessed in areas protected by hats (the head and neck area).</p>	<p>Children</p> <p>Sample size 2491</p> <p>Age Fourth graders in elementary school</p> <p>Gender (female) NR</p> <p>Ethnicity NR</p>	<p>This provides the 2 year data for the Hunter 2010 study (62)</p> <p>Intervention Intervention schools: Students received two new hats (for school and at home). Students received a brief educational lesson that established sun safety guidelines. Research assistants subsequently delivered at least two 60-minute interactive classroom sessions.</p> <p>Comparators Control schools: Students had similar sessions that targeted scientific topics other than sun protection.</p>	<p>Results at 2 years</p> <p>Hat wearing Control: percentage wearing hats remained unchanged (range 0%–2%). Intervention schools: significant change to 19%; (p<0.001). Increase in observed hat use gradually diminished during Year 2. Changes in hat use over time were significantly different for intervention students compared to control students (p 0.0001 for both linear and quadratic interaction terms, ICC 0.002).</p> <p>Tanning Intervention: 42.0% of observations showed an increase in melanin. Control: 45.6% of observations showed an increase in melanin. Difference was not significant (p=0.94).</p> <p>Naevi Intervention: mean 6.8; 95% CI = 5.6, 8.0; Control: 9.1; 95% CI = 7.7, 10.5 Not significantly different at the end of the study (p=0.07 for changes in naevi counts over time comparing intervention and control students)</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Sambrook (2012). (78)</p> <p>Design Cluster RCT</p> <p>Country Australia</p> <p>Quality [+]</p>	<p>Objectives Is increased sunlight exposure effective at improving vitamin D status and reducing falls in the elderly.</p> <p>Outcomes and outcome measurement Serum 25 hydroxy vitamin D (25OHD) measured by liquid chromatography tandem mass spectrometry. Fractures, validated by X-ray reports.</p>	<p>Older people in residential care.</p> <p>Sample size 602</p> <p>Age (years) 86.4.</p> <p>Gender (female) 71%</p> <p>Ethnicity White: 100%</p>	<p>Intervention Group 1: Increased sunlight exposure (UV). Group 2: Sunlight exposure plus calcium (UV+).</p> <p>Control Group 3: Usual care.</p>	<p><u>Serum 25OHD (nmol/L, median (IQR)) N=566;</u> UV: 36.2 (26.8 to 50.8); UV+ calcium: 31.1 (21.6 to 43.8) Control: 33.2 (24.8 to 45.7);</p> <p><u>Serum 25OHD (nmol/L, adjusted geometric mean (95% CI)) N=566</u> UV: 35.3 (32.8 to 38.0) UV+ calcium: 31.5 (29.4 to 33.8) Control: 33.6 (31.4 to 36.1)</p> <p><u>History of fracture (yes, n (%)) N=595;</u> UV: 79 (43); UV+calcium: 86 (42) Control: 99 (49);</p>	<p>Over 12 months, serum 25OHD increased more in the UV and UV+calcium groups than placebo but the difference was not statistically significant.</p> <p>There were 50 fractures sustained by 47 (8%) subjects: UV: 19 fractures by 17 (9%) people; UV+calcium: 13 fractures by 13 (6%) people. Control: 18 fractures by 17 (8%) people; No significant difference in fracture incidence among groups.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
Sancho-Garnier (2012) (7) Design RCT Country France Quality [++]	<p>Objectives To determine the effectiveness of a preventive programme entitled "Living with the Sun" (LWS): a transverse and multidisciplinary sun safety education guide for teachers.</p> <p>Outcomes and outcome measurement Change in knowledge about the sun, attitude and behaviours related to sun exposure measured by a questionnaire developed specifically for this study (% of good answers from 47 questions). At baseline (T0), after program completion (T1), 2 months after summer holidays (T2), one year later (T3). Attitudes towards sun prevention measured by a 16 item questionnaire relating to four areas (general/skin, knowledge, attitudes, behaviour); mostly binary. Change in sun protection behaviours measured by 20 questions, answered at T2 and 1 year.</p>	<p>Primary school pupils. Sample size 70 classes; 1365 children Age (years) 9.9 (9-12) Gender (female) 46% Ethnicity NR</p>	<p>Intervention "Living with the Sun" (LWS) programme: practical classroom work and activities designed to increase children's scientific knowledge of the sun, its characteristics and activities in relation to life on the earth. 10 workshops cover four topics: the effect of sun exposure on the body; the different skin types and their sensitivity to sunlight; the determinants of variations in the UV intensity; and sun protection strategies. Control No LWS programme.</p>	<p>Global knowledge score LWS: 59.2% Control: 59.5% (NS) Behaviours "about the same". 2/20 questions, were significantly different: LWS: repeated sunscreen application more often during the day (56.5% vs. 48.9% for controls) and they already had information on the sun at school (65% vs. 51% for controls).</p>	<p>Global knowledge score T1 LWS: 73.5 Control: 62.8 (p<0.001) Global knowledge score T2 LWS: 72.6 Control: 65.2 (p<0.001) Global knowledge score T3 LWS: 68.5 Control: 62.8, (p<0.001) Tan offers protection from sunburn: Yes LWS: 48.6% Control: 35.4%(p<0.04) Sun protection necessary: when walking: Yes LWS: 76.7%, Control: 69.2% (p<0.04); In the mountains: Yes LWS: 79.1% Control: 60.0% (p<0.04). Sunscreen use helps avoid later skin damage: Yes LWS: 27.6% Control: 20.5% (p<0.04). Best protection is a combination of behaviours: Yes LWS: 67.0% Control: 59.6% (p<0.04). Tan offers protection from sunburn (% yes): LWS: 48.6% Control 35.4% (p = 0.02) Sunscreen use helps avoid later skin damage (p = 0.02). Control used sunscreen more because their parents</p>	<p>LWS: significant increase in knowledge score immediately after completion that was statistically different from controls. The difference between groups diminished over the 1 year measurement period, but knowledge remained significantly higher at the final measurement in LWS group Significant differences found immediately after completion of the programme. Children from LWS classes think more often that to be tanned (i.e., to have a darker skin, as a consequence of a higher production of eumelanins) protects more from sunburn (p = 0.004); it is necessary to protect themselves when walking or being in the mountains (respectively, p = 0.03 and p < 0.000); and sunscreen use helps protect their skin from later effects (p = 0.04). The two groups strongly change their attitudes when considering the best protection, but LWS group is more convinced that using all types of protection together is best (p = 0.04). Both groups believed that being tanned looks better (47%); that it is necessary to</p>

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					<p>wanted them to. Sunscreen considered the best protection: LWS: 5% Control: 9% <u>Sun protection necessary (% yes) when doing water sports (1 year)</u> LWS: 87% Control: 78%, (p<0.04) <u>on the beach</u> LWS: 96% Control: 87%, (p<0.003) <u>in the mountains</u> LWS: 76% Control: 68%, (p=0.05). <u>On the beach do you usually use a hat (after summer holidays) %yes</u> LWS: 72.3% Control: 59.0% (p<0.05) - <u>a sunshade?</u> LWS: 75.2% Control: 64.5% (p<0.05)</p> <p><u>At the swimming pool do you usually use: Sunscreen various times during the day?</u> LWS: 65.1% Control: 57.3% (p<0.05) <u>Where did you find information on sun exposure?- At school?</u> LWS: 79.1% Control: 58.9% (p<0.05) From your parents?</p>	<p>protect yourself from the sun, especially when doing sports outside (72.5%) and on the beach (86.5%); they used sunscreen mostly to avoid sunburn (57%); and to be protected, they thought it was better to use all types of protection together (47.5%). Sun behaviours during the last holidays were compared with baseline data. The results at Time 2 were different (p < 0.05) four times out of 20. The LWS group more frequently wore a hat and used a sunshade when on the beach. They also repeated sunscreen application more often and 79% of them considered their information to have come from school. In the control group, parents gave information on the sun most often.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
					LWS: 59.8% Control: 66.9% (p<0.05)	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Schuz & Eid (2013) (21)</p> <p>Design RCT</p> <p>Country Germany</p> <p>Quality [-]</p>	<p>Objectives To evaluate the effectiveness of an intervention for adolescent sun protection intentions and behaviour.</p> <p>Outcomes and outcome measurement Risk perception of getting skin cancer measured by a questionnaire about the likelihood of getting skin cancer oneself, and compared with others of the same age and gender. Measured on a 5-point scale: 1 (very unlikely) to 5 (very likely). Outcome expectancies measured using three items based on avoiding overexposure, and decreasing risk for skin cancer and sunburn. Self efficacy: Single item for avoiding overexposure: "I am confident that I can stay in the shade even when most of my friends don't." Health-related time perspective, assessed using three items in relation to living one's life and the importance of long-term health. Appearance motives, assessed using three items of the Physical Appearance Reasons for Tanning Scale. Sunburn when using sunbed: Did you experience sunburn after using a sunbed?: 'Yes once, Yes more than once, No, Do not know'</p>	<p>Secondary school pupils</p> <p>Sample size 253</p> <p>Age (years) 14.32 (13-19)</p> <p>Gender (female) 51%</p> <p>Ethnicity NR</p>	<p>Intervention A 45-minute interactive presentation addressing self-efficacy, outcome expectancies, risk perception, appearance motives, and health-related time perspective plus general information about effects of sun exposure, skin types, skin cancer, premature aging, and instructions on sun protection. Participants received a printout of a personal UV photo depicting UV damage.</p> <p>Control 45-minute interactive presentation addressing the same study constructs with regard to interdental hygiene. Participants received UV photographs showing plaque levels on the teeth.</p>	<p>NR</p>	<p>Predicted risk perception Being in the intervention group predicted considerable changes in risk perception and outcome expectancies (beta = 0.30 [SE 0.36], p<0.001).</p> <p>Predicted outcome expectancies Being in the intervention group predicted considerable changes in risk perception and outcome expectancies (beta = 0.30 [SE 0.06], p<0.001).</p> <p>Self-efficacy Intervention did not significantly predict self-efficacy (beta = -0.03[SE 0.06], (NS). There were no changes in self-efficacy.</p> <p>Health-related time perspective Changes in self-efficacy, outcome expectancies and health-related time perspective predicted changes in intention (beta = 0.12[SE 0.05], p<0.01). Participants in the intervention group not only reported a longer time perspective but also less appearance reasons for tanning at immediate follow-up.</p> <p>Appearance motives Intervention predicted appearance motives (beta = -0.12[SE0.05], p<0.01). Changes in intention and changes in appearance motives predicted changes in exposure behaviour.</p> <p>Sunburn In 2008 and 2009, 52% and 55%, respectively, of sunbed users experienced sunburn caused by sunbed use, and 16% and 17% had been burnt more than once.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Schuz (2013) (20)</p> <p>Design RCT</p> <p>Country Germany</p> <p>Quality [+]</p>	<p>Objectives To assess whether a self-affirmation manipulation can mitigate defensive responses to personalized visual risk feedback in the skin cancer prevention context (UV photography), and whether the effects pertain to individuals with high behavioural risk status (high personal relevance of tanning).</p> <p>Outcomes and outcome measurement Perceived self-risk of skin cancer and premature aging compared with other people, measured on a scale ranging from 1 (very low) to 5 (very high) Sun avoidance intentions. Exposure behaviour questionnaire.</p>	<p>People visiting a public science event</p> <p>Sample size 266</p> <p>Age (years) 33.8 (11-71)</p> <p>Gender (female) 69.4%</p> <p>Ethnicity NR</p>	<p>Intervention UV photo only of participant highlighting areas of sun damage (risk feedback). Self-affirmation manipulation only: participants scored themselves on a range of personal strengths and values.</p> <p>Control No risk feedback or self-affirmation.</p>	NR	<p>Significant self-affirmation risk status interaction effect on risk perception, $F(1,153) = 4.69, p=0.03$, Cohen's $f = 0.18$. High-risk participants not given the chance to self-affirm reported an overall decrease in risk perception, whereas high-risk participants in the self-affirmation condition reported a slight increase (NS).</p> <p>Exposure behaviour: A significant main effect of the self-affirmation manipulation on risk behaviour: self-affirmed participants reported lower rates of deliberate sun exposure than non-affirmed participants, $F(1, 152) 4.17, p .04$, Cohen's $d 0.25$. There was a significant self-affirmation risk status interaction on risk behaviour, $F(1, 152) 6.02, p .02$, Cohen's $f=0.20$. High-risk participants reported higher adaptive changes in behaviour after receiving the self-affirmation manipulation when compared with high-risk participants who did not get the chance to self-affirm, whereas low-risk participants in the affirmation and non-affirmation conditions did not differ. There was a significant three-way interaction between the two experimental manipulations and risk status, $F(1, 152) 6.87, p .01$, Cohen's $f 0.21$. High-risk individuals receiving only the UV photo showed reactant behaviour in reporting higher levels of deliberate sun exposure than high-risk individuals who were self-affirmed before viewing the UV photo, $t(152) 2.67, p .004$, Cohen's $d 0.66$, while there is no significant difference between the experimental groups in low-risk individuals.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
Seidel 2013 (107) Design RCT Country Germany Quality [-]	Objectives To estimate the effectiveness of a combined environmental intervention (EI) addressing parents, teachers, and nursery nurses) and cognitive-behavioural intervention (BI) for children, in enhancing children's knowledge about sun protection compared to the sole EI Outcomes and outcome measurement Children's knowledge about sun protection behaviour measured by recognition of correct behaviours from five coloured photographs behaviours (shirt, sunglasses, sun lotion, sunhat, and sun shade).	Nursery school children. Sample size Intervention; 61 parents Control: 54 Intervention: 34 children completed post-test Control: 46 children completed post-test. Age (years) 4.3 years Gender Ethnicity	Intervention Combined environmental intervention (EI+BI). Parents and nursery nurses received a German cancer aid brochure on sun protection for parents of young children in July 2011 plus a cognitive-behavioural intervention (The theatre play "Clown Zitzewitz and sun protection" was performed in July 2011). Comparator The control group received EI only.	Answer correct to five photos: EI+BI: 2.9 (1.2), EI: 2.7 (1.4)	Answer correct to five photos: EI+BI: 3.6 (1.3), EI: 2.7 (1.4), (p<0.05). After adjustment for the pretest score and age, knowledge of sun protection differed significantly between the groups. Implementing a theatre play in nursery schools, in addition to an environmental intervention, lead to a moderate increase in knowledge.

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Siegel (2010) (22)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality [-]</p>	<p>Objectives To assess the effectiveness of UV-filtered photography on knowledge of skin cancer, sun protective behaviours, perceptions of acquiring skin cancer, and health promotion in skin cancer prevention in first year student nurses.</p> <p>Outcomes and outcome measurement Perceptions of acquiring skin cancer which seems to have been measured by an adapted survey instrument. Knowledge of skin cancer. Collected as above. Health promotion in skin cancer prevention. Collected as above. Sun protective behaviours. No details. Collected as above.</p>	<p>First year student nurses.</p> <p>Sample size 90</p> <p>Age (years) NR</p> <p>Gender NR</p> <p>Ethnicity NR</p>	<p>Intervention UV-filtered photography treatment plus skin cancer lecture.</p> <p>Skin cancer lecture only</p> <p>Control No intervention.</p>	<p>NR</p>	<p>Mean difference (SD) for difference between pre and post values</p> <p>Perceptions of acquiring skin cancer Photo+lecture: -3.03 (6.06), p=0.012 Lecture: -1.13 (5.33), p=0.26 Control: 1.44 (5.25), p=0.17 Significant difference between pre and post values (t=-2.69, p<0.005) for Photo+lecture, but not for the lecture and control groups.</p> <p>Knowledge of skin cancer Photo+lecture: -3.32 (4.47), p=0.001; Lecture: -3.10 (3.93), p<0.0001; Control: -0.29 (4.93), p=0.76 No evidence of a significant difference between pre- and post values in the control group. In the lecture group and the Photo+lecture group there were significant differences between pre and post values (t=-4.25, p<0.001 and t=-3.93, p=0.001).</p> <p>Health promotion in skin cancer prevention Photo+lecture: 0.03 (3.47), p=0.96 Lecture: -5.0 (2.44), p=0.27 Control: -0.14 (2.61), p=0.77 No evidence of a significant difference between pre and post values for any group.</p> <p>Sun protective behaviours Photo+lecture: -13.61 (10.8), p<0.001 Lecture: -13.06 (9.99), p<0.001 Control: -5.66 (10.1), p=0.007 Significant difference between pre and post values for all groups. The authors noted that the difference found in the control group may be due to a testing effect.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Stock (2009) (19) Design RCT Country USA Quality [+] Included in one of the SRs</p> <p>Erratum: M. L. Stock, M. Gerrard, F. X. Gibbons, J. L. Dykstra, C.-Y. Weng, H. I. Mahler, L. A. Walsh and J. A. Kulik. Sun protection intervention for highway workers:</p>	<p>Objectives To examine the effectiveness of UV photography and both photoaging and skin cancer information in a sample of high-risk, male outdoor workers over a 1-year period.</p> <p>To examine potential mediators of changes in their protective behaviour and which component of the intervention would be more effective with this population.</p> <p>Outcomes and outcome measurement Perceptions of skin damage: “How much long-term skin damage do you think you have gotten from the sun?” (1=none, 7=a lot). Attitudes towards sun protection assessed from 5 statements relating to tanning and sunscreen use, rated on 5-point scale (strongly disagree to strongly agree). Sun protection cognitions, based on a combination of: (1) Attitudes: 6 items relating to nuisance, appearance and health, rated on a 5-point scale); (2) Perceived risk: 4 items rated on 7-point scale (no chance to very likely); and (3) Prototypes: how well 3 adjectives describe a specific person, assessed on 7 –point scale (not at all to extremely). Sun protection intentions measured by an average of 10 items, each assessed on separate 5-point scales (1 = strongly disagree, 5=strongly agree). Sun Protection at 2-Month Follow-Up (T3), measured by 6 items: “During the last 7–8 weeks how often did you...” “wear sunscreen on your face (body) when your job required you to be outdoors?”, “...wear sunscreen on your face (body) when you were outdoors on your own time?” and “...wear a hat (long sleeves) when your job required you to be outdoors?” Skin</p>	<p>Male outdoor road workers Sample size 162 (149 analysed) Age (years) 46.5 (24-64) Gender (female) 0% Ethnicity White: 97%</p>	<p>Intervention 4 conditions UV photo of their face + photoaging educational video; UV photo of their face + skin cancer video; Photoaging video; Skin cancer educational video Control No UV photo or video.</p>	<p>NR</p>	<p>Perceptions of skin damage No UV, aging: 4.93; no UV, cancer: 5.33; UV combined: 5.45; Control: 4.58. For combined vs no UV, aging, $p<0.03$. For no UV, cancer vs control, $p<0.06$</p> <p>Participants who saw their UV photo reported more skin damage from the sun than did those who did not view their UV photo ($F(1, 146)=5.0$, $p<0.03$, $d=0.41$, $M=5.45$ vs. 4.93). Men in each UV group reported significantly higher estimates than those in the control condition ($F_s>4.9$, $p_s<0.03$, $d_s>0.6$) Attitudes towards sun protection (high score represents more favourable sun protection attitudes). No UV, aging: 3.56 (0.09); No UV, cancer: 3.65 (0.10); UV aging: 3.66 (0.11); UV cancer: 3.57 (0.09); control: 3.01 (0.11) (scale range=2–5) All four intervention conditions were significantly different from the control condition (all $F_s>7.55$, $p_s<0.01$, $d_s>0.81$). None of the intervention conditions was significantly different from all the other intervention conditions ($F_s<0.63$, $p_s>0.4$). Combined across groups, the intervention participants reported more positive attitudes toward sun protection than those in control group, $F(1, 146) = 11.49$, $p=0.001$, $d=0.86$; $M_s=3.6$ vs. 3.1, respectively. Sun protection cognitions Controlling for pretest cognitions, there was no significant difference between the control and</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Long-term efficacy of UV photography and skin cancer information on men's protective cognitions and behavior: Erratum. Annals of Behavioral Medicine. 2010. 39:100 {#11916}</p>	<p>colour was assessed using a Minolta CM-2600d spectrophotometer. The six sun protection items and three b* skin colour readings (reverse coded) were standardised and combined ($\alpha=0.74$). Sun Protection behaviour at T4 measured by six behaviours: "How often do you wear sunscreen (hat/long sleeves) when your job requires you to be outdoors for an extended time," "In general, when you spend time in the sun, how often do you use sunscreen on your face (body)," and "How often do you wear sunscreen when you are outdoors on your own time." Skin colour was assessed using a Minolta CM-2600d spectrophotometer. At T1 and T4, three consecutive readings of L* and b* were taken from the outer and inner sides of the arm and from the left side of the face. The L* readings did not significantly correlate with the other sun protection items (e.g., T1 ps> 0.3) and so were not used in the sun protection construct. The b* readings did correlate with sun protection (e.g., T1 rs=-0.19, -0.17, -0.23, ps<0.05). The six sun protection items and three b* skin colour readings (reverse coded) were standardised and combined into a sun protection index (T1 $\alpha=0.76$; T4 $\alpha=0.70$).</p>				<p>no-UV aging condition ($F(1, 52) = 1.82, p < 0.14$). Marginal effects found for the control condition versus the other three (cancer-related) conditions: men in these conditions tended to report more favourable sun protection cognitions (all $F_s > 2.77, p_s \leq 0.10, d_s > 0.5$). Not specified No UV aging: 0.96 (0.10); No UV, cancer: 1.05 (0.09); UV aging: 1.12 (0.10); UV cancer: 0.98 (0.09); Control: 0.79 (0.10) GLM ANCOVAs compared each intervention to the control on T3 sun protection controlling for T1 sun protection and the additional control variables. When the four interventions were combined, the intervention participants reported more sun protection than those in the control group, $F(1, 144) = 6.04, p < 0.02, d = 0.68, M_s = 0.78$ vs. 1.02, respectively. Participants in the no-UV/aging condition reported marginally higher sun protection than control group, $F(1, 51) = 3.09, p < 0.09$. Participants in the other three interventions reported significantly greater sun protection than those in control (all $F_s > 4.15, p_s < 0.05, d_s \geq 0.6$). Additional ANCOVAs revealed that none of the interventions was significantly different from each other ($F_s < 0.82, p_s > 0.37$). GLM ANCOVAs, controlling for baseline sun protection and background constructs found that control group, followed no-UV/aging group, had the lowest level of sun protection. Sun protection in the no-UV/aging group was not significantly higher than those in control, $F(1, 52) = 2.13, p = 0.15$. The other three groups with the UV photo and/or cancer video had</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
					<p>significantly greater sun protection than those in control (all $F_s > 6.95$, $p_s \leq 0.01$, $d_s > 0.79$). ANCOVAs showed that the other three groups had significantly higher levels of sun protection at T4, controlling for T1 levels, than did those in the no-UV/aging group ($p_s < 0.02$). When the three UV and cancer video interventions were combined and compared to the no-UV/aging and control groups combined, the ANCOVA was also significant, $F(1, 146) = 13.66$, $p < 0.001$, $d = 0.72$. Photoaging information alone did not produce significant changes in long-term sun protection. The most effective interventions for high-risk male population included the UV photo and/or information related to skin cancer.</p>

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<p>Stoner (2009) (57)</p> <p>Design RCT</p> <p>Country USA</p> <p>Quality [-]</p>	<p>Objectives To investigate variables that affect compliance with framed messages which promote behaviours that aid in the prevention or detection of skin cancer.</p> <p>Outcomes and outcome measurement Intention to undertake prevention behaviours: 7 questions about the likelihood of engaging in various skin cancer prevention behaviours, rated using an 8-point Likert-type scale (1 - not at all likely to 8 -extremely likely). Skin cancer detection behaviour: 7 questions about their likelihood of engaging in various skin cancer detection behaviours, rated using an 8-point Likert type scale.</p>	<p>Women</p> <p>Sample size 136</p> <p>Age (years) Younger group: 19.93 (2.42). Older group: 75.95 (8.08) years.</p> <p>Gender (female) 100%</p> <p>Ethnicity White: 94% Black: 1.5% Hispanic: 1% Asian 1% Native American 1.5% Other 1%</p>	<p>Interventions Four messages that described behaviours to prevent and detect skin cancer. Each message addressed three questions relating to what skin cancer is, how do you know if you have it, and what can you do to protect against it. The messages promoted the same behaviours, but were presented in either a positive or negative frame and with either a high level (80% increase or decrease of risk) or low level (20% increase or decrease of risk) of efficacy of the prevention and detection behaviours.</p>	<p>Intention to undertake prevention behaviours Effect of frame B = 0.13 (SE 0.12), beta = -0.09, (NS). The framing of the message was not a significant predictor of intention.</p> <p>Skin cancer detection behaviour Effect of frame, B = -0.13 (SE 0.11), beta = -0.11, (NS). The framing of the message was not a significant predictor of detection behaviour.</p>	<p>Older adults reacted similarly to younger adults following exposure to framed messages, and endorsed stronger intentions than the younger adults to engage in prevention behaviours (M=4.5, SD=1.13 vs M=2.85, SD=1.18) regardless of message frame[F(1, 132) = 66.02, p<0.001].</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Stover (2012) (93)</p> <p>Design Pre- to post-intervention questionnaires.</p> <p>Country Germany</p> <p>Quality [+]</p>	<p>Objectives To evaluate the 'SunPass' project.</p> <p>Outcomes and outcome measurement Skin types, UV index: Questionnaire. Kindergarten policies: Questionnaires. Sunscreen use, and sun protection arrangements: (i) wear protective clothing covering shoulders, elbows, knees and head; (ii) seek shade; (iii) avoid hours of strongest ultraviolet radiation. Information gathered by questionnaire</p>	<p>Children in kindergartens and their caregivers</p> <p>Sample size 55 kindergartens; 5424 children.</p> <p>2286 parents and 448 kindergarten workers completed the questionnaire before the intervention, and 1101 parents and 330 teachers completed post-intervention questionnaires.</p> <p>Age (years) Children: 3.8 (0-12)</p> <p>Gender NR</p> <p>Ethnicity Not reported</p>	<p>Pre- to post-intervention questionnaires administered before and after the 'SunPass' project which involved an interventional lecture, site inspections and certification.</p>	<p>Staff members: 36.5% did not know the four most important skin types and their individual risk for sunburns.</p> <p>Staff members: 40.5% knew about the UV index</p> <p><u>Encouragement of headgear use for staff members by their institution:</u> 20.8%.</p> <p>Parents: 4.3% did not use sunscreen on their children.</p> <p>Parents: 89% used sunscreen once per day or several times daily.</p> <p>Parents: 0.9% made no sun protection arrangements; 16.9% made 1 sun protection arrangement; 18.7% made 2 sun protection arrangements; 63.5% made all 3 sun protection arrangements.</p> <p>Other information: 22.2% of parents reported one to five</p>	<p>Staff members: 21.3% did not know the four most important skin types and their individual risk for sunburns.</p> <p>Staff members: 83.8% knew about the UV index:</p> <p><u>Encouragement of headgear use for staff members by their institution:</u> 36.7%.</p> <p>Parents: 2.6% did not use sunscreen on their children</p> <p>Parents: 90.6% used sunscreen once per day or several times daily.</p> <p>Parents: 0.85 made no sun protection arrangements; 12.7% made 1 sun protection arrangement; 16.4% made 2 sun protection arrangements; 70.1% made all three sun protection arrangements.</p>	<p>Reduction in staff members questioned who did not know the four most important skin types and their individual risk for sunburns after the intervention ($p < 0.001$). Percentage of staff members naming the skin types correctly increased only slightly, by 0.3% ($P = 1$). Very significant increase in knowledge about the UV index ($p < 0.001$). Encouragement of headgear use for staff members by their institution increased significantly ($p < 0.001$). Children were not encouraged more after the intervention to put sunscreen on themselves ($p = 0.425$) Significant increase in sun-protection behaviour after the intervention ($p < 0.001$).</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
				sunburns of their child since birth, 0.7% of children had five to 10 sunburns, and 0.4% had had > 10 sunburns.		

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Thieden (2013) (119)</p> <p>Design Longitudinal</p> <p>Country Denmark</p> <p>Quality [+]</p>	<p>Objectives To investigate whether people change their sun behaviour over a period of 7 years.</p> <p>Outcomes and outcome measurement Sun exposure measured by dosimeter</p>	<p>Adults.</p> <p>Sample size 38</p> <p>Age 51 (31–71)</p> <p>Gender (female) 55%</p> <p>Ethnicity Danish Ancestry</p>	<p>Volunteers of Danish ancestry who had previously participated in UVR dosimeter studies in 1999–2001. Subjects wore a wrist-borne personal electronic UVR dosimeter and completed sun exposure diaries over the summer half of a year.</p> <p>Sample characteristics: 21 indoor workers, 5 outdoor workers (municipal gardeners), 4 "sun worshippers", 2 golfers.</p>	<p>Mean (median) individual daily sun exposure hours: 1999: 1.8 h (1.8 h); 2000: 2.3 h (2.0 h); 2001: 2.8 h (2.2 h).</p>	<p>Mean (median) individual daily sun exposure hours: 2006: 2.8 h (2.5 h)</p> <p>Significantly more exposure hours in 2006 than in 1999 ($p = 0.012$) and 2000 ($p < 0.001$) but a similar amount to 2001 ($p = 0.3$).</p> <p>Some persons continuously received higher or lower UVR doses than their peer participants throughout the years in spite of the different weather conditions.</p> <p>A "year effect" was seen in number of days with risk behaviour expressed as "exposing shoulders", which was significantly higher in 2006 than in all three previous years, probably because 2006 was sunnier than other years.</p> <p>No statistically significant "year effect" regarding number of days in which people spent sunbathing to get a tan.</p> <p>A significant correlation was found between the estimated UVR dose for 2006 and the mean estimated annual UVR dose for 1999–2001, Spearman's $r = 0.83$, $p < 0.001$.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
<p>Thomas (2011) (28) Design RCT Country Ireland Quality [+]</p>	<p>Objectives Does the health message 'framing effect' occur for messages concerning the consequences of skin cancer for one's appearance or one's health. The effect of the frame and focus of health messages on intentions to perform skin protection behaviours and the perceived threat of skin cancer was investigated.</p> <p>Outcomes and outcome measurement Perceived threat of skin cancer (severity of and personal susceptibility to the threat) assessed from 3 statements, on a scale of 1 (strongly disagree) to 7 (strongly agree). Average responses to each item were multiplied to give overall threat.</p> <p>Behavioural intentions to use sunscreen and sunbeds assessed based on intentions, plans and wants (each with three components). The intentions measure was the sum of the average of the responses to each component (protective clothing, sunscreen, and sunbeds), assessed on a 7-point scale (1 = definitely do not, 7 = definitely do).</p>	<p>Adults Sample size 390 Age (years) 20.4 (3.1) Gender (female) 58% Ethnicity NR</p>	<p>Interventions Health messages were presented as part of a questionnaire that assessed intentions to perform skin protection behaviours, the threat of skin cancer, and public body consciousness. Each message contained factual data about skin cancer followed by the framing manipulation, which emphasised the risks of not protecting oneself from the sun (loss frame) or the benefits of protecting oneself from the sun (gain frame) in terms of the consequences for one's appearance (e.g., prematurely aged skin) or health (e.g., premature death).</p>	<p>Perceived threat of skin cancer, overall means (SE): severity: 5.20 (0.50); susceptibility 3.61 (0.80) Behavioural intentions sunscreen mean 5.27 (SE 0.08); sunbed 1.69 (0.07); clothing 3.63 (0.10)</p>	<p>Perceived threat of skin cancer (post message) Post-message, there was an increase in threat scores (means of 23.37 and 18.59) ($p < 0.025$) ($d = 0.26$).</p> <p>Perceived threat difference scores were higher for the appearance-focused (gain-framed) messages (means 6.09 and 3.56). No significant effect of message frame on threat. Scores on the severity and susceptibility components of the perceived threat measure were higher post-message in all message conditions.</p> <p>Behavioural intentions (post message): Mean intention scores 16.29 and 15.12 ($p < 0.025$, $d = 0.08$).</p> <p>Main effect of message frame, $F(1,386) = 5.02$, $p < 0.05$, partial eta squared = 0.01; scores higher on loss-framed messages ($M_s = 1.55$ and 0.82).</p> <p>Main effect of message focus and the interaction were not significant ($F_s < 1$, $p_s > 0.10$, partial eta squared = 0.01).</p> <p>There was an increase in</p>	<p>The findings held when individual differences in body consciousness were controlled for.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
					intention scores from pre-to post-message. Intentions to perform different skin protection behaviours were greater for loss-framed messages.	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Results	Comments
Turner (2014) (115) <u>Design</u> Observational (ecological) <u>Country</u> Australia <u>Quality</u> [+]	<u>Objectives</u> To determine hat-wearing compliance rates of students attending primary school and their adult role-models in the skin-cancer prone population of Townsville, North Queensland, Australia. <u>Outcomes and outcome measurement</u> Hat wearing by direct observation.	Primary school students, parents, caregivers and teachers. <u>Sample size</u> 36 primary schools; 28,775 students; 2954 adults. <u>Age</u> 5–12 <u>Gender</u> NR <u>Ethnicity</u> NR	<u>Recruitment method</u> Schools located within the Townsville District recognized by Education Queensland.	52.2% of the 28,775 students and 47.9% of the 2954 adult role-models observed at 36 Townsville primary schools were wearing a hat (any style) when sighted (based on a median of 9 [IQR = 8, 11] observations per school between 2009 and 2011). Hat use (all styles) among SunSmart school (SSS) and non-SunSmart school (NSSS) students was similar before (24.2% vs 20.5%; $p = 0.701$), after (25.4% vs 21.7%; $p = 0.775$) and during school-hours (93.0% vs 89.2%; $p = 0.649$) except SSS students wore gold-standard (broad-brim/ bucket/ legionnaire) hats during school play-breaks more often in the warmer months (October–March) than NSSS students (54.7% vs 37.4%; $p = 0.02$). Although the proportion of adults who wore hats (all styles) was similar at SSS and NSSS (48.2% vs 46.8%; $p = 0.974$), fewer adults at SSS wore them before school (3.7% vs 10.2%; $p = 0.035$).	Stated for all eligible schools N (%): Ownership: Government: 23 (63.9); Non-government: 13 (13.1); School size: Small (≤ 399 students): 12 (33.3); Medium (400–799 students): 15 (41.7); Large (≥ 800 students): 9 (25.0); ICSEA (index of community socio-educational advantage (Australian curriculum assessment and reporting authority, 2012).) group: \leq mean (≤ 1000): 31 (86.1); $>$ mean (≥ 1001): 5 (13.9); Sun-protection policy score (refers to the total score attained by schools when their sun-protection policies were independently evaluated against pre-determined criteria (maximum score possible was 12)): \leq median (≤ 3): 21 (58.3); $>$ median (≥ 4): 15 (41.7).

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Van Osch 2008 (67)</p> <p>Design RCT</p> <p>Country The Netherlands</p> <p>Quality [-]</p>	<p>Objectives To determine whether formulating specific plans with regard to sunscreen use can influence parental sun protection behaviour.</p> <p>Outcomes and outcome measurement Mean sunscreen use according to baseline intentions to use sunscreen (high or low) and whether or not received the intervention or control. 5 point scale ranging from (1) never to (5) always, with 5 being the target behaviour. Intention to use sunscreen was measured on a 7 point scale from 1) definitely not to 7) definitely yes.</p>	<p>Parents of children aged 6 to 9 years, who were registered members of an Internet panel of a private research company.</p> <p>Sample size 1036 parent child dyads.</p> <p>Age Children: 7.3 (1.08, 6-9). Parents: 36.4 years (5.17)</p> <p>Gender Parents: 77%</p> <p>Ethnicity NR</p>	<p>Intervention Questionnaire with implementation intention manipulation: Questionnaire measured parents' intention to use sunscreen on their children and actual sunscreen use. The implementation intention manipulation was a plan for sunscreen use requiring parents to focus on the situation(s) where they would use sunscreen.</p> <p>Comparators Questionnaire without implementation intention manipulation.</p>	<p>Intention to use sunscreen (7 point scale) Mean for whole group: 5.43 (SD 1.27) Participants were divided into low and high intention groups (based on the median of 5).</p>	<p>Mean (SD) on 5-point scale: Low intention, control: 2.81 (1.43); High intention, control: 3.75 (1.28); Low intention, intervention: 2.50 (1.18); High intention, intervention: 4.05 (1.22). The intervention had no overall effect, but a significant group x intention interaction effect existed (p=0.02). Implementation intentions were effective in the subgroup of highly motivated participants, increasing adequate parental sunscreen use by 13.5%. Implementation intentions did not increase parents' intentions towards sunscreen use, indicating that their behavioural effect was not due to heightened motivation.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results	Comments
Walsh (2012) (23) Design RCT Country USA Quality [-]	<p>Objectives To examine the impact of an ultraviolet (UV) photography intervention and masculinity on college men's sun protection cognitions, including: perceived vulnerability to skin damage, attitudes toward sun protection, willingness to engage in sun protection behaviours, and intentions to receive a skin cancer exam.</p> <p>Outcomes and outcome measurement Perceived vulnerability of skin cancer and photoaging. Two questions relating to effects of tanning. Rated on 7-point scale (1 = not at all likely; 7 = very likely) Attitudes towards sun protection Agreement with five statements about sun exposure and protection behaviours, rated on a 7point scale from strongly disagree to strongly agree. Willingness to engage in sun protection. Willingness assessed based on three questions for each of two scenarios. Rated on a 7-point scale (not very to very willing). Skin exam intention. Response to single item assessing skin exam</p>	Undergraduate psychology students Sample size 179 Age (years) 18.87 (1.10) (range: 18-22) Gender (Female) 0% Ethnicity White: 70% Asian: 18%	<p>Intervention Participants viewed both a UV-photo and a regular black-and-white photo of their face. Men in the UV photo condition were told that dark, freckled, or pitted spots on the UV photo showed damage that had occurred due to UV exposure; UV exposure is a risk factor for skin cancer and photoaging; and increasing their sun protection behaviours can help prevent additional UV damage.</p> <p>Comparators Black-and-white photograph only.</p>	NR	<p>Men who saw their UV photo reported higher perceived vulnerability (beta = 0.13, t = 2.12, P = 0.04). The UV photo condition was associated with higher perceived vulnerability among more masculine men (beta = 0.26, t = 2.97, P<0.01), but not among less masculine men (P = 0.96).</p> <p>UV photo condition associated with higher sun protection attitudes among more masculine men (beta = 0.22, t = 2.03, p = 0.04), but not less masculine men (p = 0.22).</p> <p>UV photo condition marginally associated with higher sun protection willingness (beta = 0.11, t = 1.92, p<0.06). Positive condition effect significant among more masculine men (beta = 0.27, t = 3.27, p = 0.001), but not less masculine men (p = 0.60).</p> <p>UV photo condition associated with higher skin exam intention among more masculine men (beta = 0.35, t =</p>	The UV photo condition was associated with higher sun protection attitudes, higher sun protection willingness and higher skin exam intention among more masculine men, but not among less masculine men.

	intention: "I plan to have a doctor check my skin for skin cancer in the next year," (1 = definitely not; 7 = definitely).				4.06, $p < 0.001$), but not less masculine men ($p = 0.58$).	
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Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>White 2010 (99)</p> <p>Design Non-randomised comparative study using a questionnaire</p> <p>Country Australia</p> <p>Quality [-]</p>	<p>Objectives To provide a preliminary test of a theory of planned behaviour (TPB) belief-based intervention to increase adolescents' sun-protective behaviours in a high risk area, Queensland, Australia.</p> <p>Outcomes and outcome measurement Beliefs/attitudes/intentions towards sun protection Outcomes were rated on a scale from 1 (extremely unlikely) to 7 (extremely likely). Performing sun-protective behaviours (i.e., using SPF 30+ sunscreen, wearing protective clothing such as a hat, long-sleeved shirt and sunglasses, and seeking shade between 10 am and 3 pm) every time you go in the sun for more than 10 minutes during the next week". Behaviour: 1 item: 1 (never) to 7 (always) "Think about the past week. In general how often did you perform sun-protective behaviour?"</p>	<p>Adolescents attending one of two secondary schools (one government and one private)</p> <p>Sample size 80 recruited, (54 analysed)</p> <p>Age (years) 14.53 ± 0.69 (13–16)</p> <p>Gender (female) 59.50%</p> <p>Ethnicity NR</p>	<p>Intervention The intervention comprised three, one hour in-school sessions facilitated by Cancer Council Queensland employees with sessions covering the belief basis of the TPB (i.e., behavioural, normative, and control [barrier and motivator] sun-safe beliefs). Participants completed questionnaires assessing sun-safety beliefs, intentions, and behaviour pre- and post-intervention.</p>	<p>Behavioural beliefs: Intervention 4.54 (.14) Control 5.02 (.13);</p> <p>Normative beliefs Intervention 4.58 (.21) Control 5.17 (.19);</p> <p>Control beliefs (Barriers) Intervention 4.11 (.24) Control 4.08 (.22);</p> <p>Control beliefs (Motivators) Intervention 4.19 (.26) Control 5.39 (.24);</p> <p>Intention Intervention 4.48 (.32) Control 5.24 (.29)</p> <p>How often do you perform sun protective behaviour ? Intervention 2.96 (.37) Control 3.93 (.33)</p>	<p>Behavioural beliefs: Intervention 4.58 (.17) Control 4.78 (.16);</p> <p>Normative beliefs Intervention 5.07 (.25) Control 4.90 (.22); Control beliefs (Barriers) Intervention 4.45 (.21) Control 4.16 (.19);</p> <p>Control beliefs (Motivators) Intervention 4.84 (.20) Control 4.97 (.18);</p> <p>Intention Intervention 5.31 (.27) Control 5.00 (.25)</p> <p>Students completing the intervention reported stronger sun-safe normative and motivator beliefs and intentions across time than those in the control condition.</p> <p>How often do you perform sun protective behaviour ? Intervention 3.88 (.37) Control 3.44 (.33)</p> <p>Students completing the intervention reported performance of more sun-safe behaviours across time than those in the control condition.</p>

Study details	Objectives and outcomes	Systematic review methods	Results	Comments
<p>Williams (2013) (15) Design Systematic review Country NR Quality [low]</p>	<p>Objectives To assess the effectiveness of appearance-based interventions to reduce UV exposure and/or increase sun protection intentions and behaviours. Outcomes and outcome measurement Perceived susceptibility to photoaging Combined effect size (r). No details of how outcome assessed in primary studies Sun protection intentions Combined effect size (r). No details of how outcome assessed in primary studies Indoor tanning behaviour. No details of how these outcomes were assessed in the included studies. Changes in indoor tanning behaviour (Combined effect size (r)) Future sun exposure. No details of how these outcomes were assessed in the included studies. Changes in future sun exposure (Combined effect size (r))</p>	<p>Populations Any Intervention UV photograph plus photoaging information (13 studies); Photoaging Information (10 studies). Photoaging information was delivered via booklets, videotapes, slideshows, and education sessions. Two studies used computer technology to digitally alter photographs to indicate damage. Comparators Control groups; No intervention; Other combination of intervention component.</p>	<p>21 included studies and 6344 participants. <u>Perceived susceptibility to photoaging</u> 7 studies (n=252): r = 0.2260 (95% CI = 0.1183; 0.3285). Combined z = 4.07, Combined p = <0.0001 r-value of 0.22 is considered to be a small to medium effect size (Cohen 1988). Perceived susceptibility is significantly increased after viewing a UV photo and photoaging information. <u>Sun protection intentions</u> 8 studies (n=625): r=0.386 (95% CI: 0.2819, 0.4493. Combined z=16.16, combined p=<0.0001 Combined effect size considered above a moderate effect. Sun protection intentions are significantly increased after viewing a UV photo and photoaging information <u>Indoor tanning behaviour</u> 2 studies, r = -0.8266 (95% CI = -0.8513; -0.7984) p=<0.0001. Fail safe N = 155. Combined z = -20.59. Critical no. for drawer = 20. .The studies in this meta-analysis were found to be heterogeneous and differed significantly from each other. The meta-analysis would have needed an additional 155 non-significant studies to render the full meta-analysis non-significant, which means that the file drawer problem (Rosenthal, 1991) is unlikely to affect this study as only 20 additional non-significant studies are likely to exist. The lowest value in the confidence interval is 0.8513, suggesting that the effect in the population is a large effect in Cohen's terms. The combined probability of the meta- analysis was p <.0001, indicating that viewing photoaging information has a significant effect on reducing indoor tanning behaviour. <u>Future sun exposure</u> 2 studies: r = -0.1307 (95% CI = -0.0258; -0.7984 (95% CI: 0.0258, -0.2328) p=0.35. Fail safe N = NR. Combined z = -2.30. Critical no. for drawer = NR. Studies were homogeneous, The combined effect size was considered to be a small effect size (Cohen).</p>	<p>From meta-analyses, appearance-based interventions using UV photographs and/or photoaging information do have a significant effect on future sun protection intentions and perceived susceptibility towards photoaging. From meta-analyses, appearance-based interventions using UV photographs and/or photoaging information do have a significant effect on future sun protection intentions. From meta-analyses, appearance-based interventions using UV photographs and/or photoaging information do have a significant effect on indoor tanning behaviour, but the effect on future UV exposure intentions is not significant.</p>

Study details	Objectives and outcomes	Systematic review methods	Results	Comments
			Combined probability of meta-analysis (p=0.3.5) indicated that viewing an UV photograph and photoaging information does not have a significant effect on participants' future UV exposure.	

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Baseline	Results
<p>Williams (2013) (98)</p> <p>Design Non-randomised comparative study at a university</p> <p>Country UK</p> <p>Quality [+]</p>	<p>Objectives To investigate the impact of a facial-ageing intervention on women's sun protection attitudes and behavioural intentions, compared to a health literature intervention where participants viewed literature on the effect of ultraviolet (UV) exposure on health.</p> <p>Outcomes and outcome measurement Attitudes to benefits and risks of sun; intention to sun protect; perceived susceptibility to sun damage questionnaires.</p>	<p>Female university students</p> <p>Sample size 70</p> <p>Age 23.70 (5.03) (18-34)</p> <p>Gender (female) 100%</p> <p>Ethnicity NR</p>	<p>Intervention Facial-ageing intervention</p> <p>Comparators Health literature on the effect of UV exposure on health was provided.</p>	<p>Sun benefit attitude: Facial-ageing: 6.41 (2.35); Health literature: 6.57 (2.52);</p> <p>Sun risk attitude: Facial-ageing 13.27 (1.70); Health literature: 13.07 (1.41);</p> <p>Sun protection intentions: Facial-ageing 10.74 (3.04); Health literature: 9.26 (2.94);</p> <p>Perceived sun damage susceptibility: Facial-ageing 6.84 (1.67); Health literature: 6.76 (1.99)</p>	<p>Sun benefit attitude: Facial-ageing: 7.29 (2.07); Health literature: 6.93 (2.49);</p> <p>Sun risk attitude: Facial-ageing: 14.06 (1.23); Health literature: 13.36 (1.48);</p> <p>Sun protection intentions Facial-ageing: 12.16 (3.02); Health literature: 10.10 (3.11);</p> <p>Perceived sun damage susceptibility: Facial-ageing: 7.53 (1.89); Health literature: 7.16 (1.85). Participants in the facial-ageing intervention condition scored significantly higher on intentions, negative attitudes and perceived sun damage susceptibility after taking part in the intervention, compared to those in the health literature intervention condition.</p>

Study details	Objectives and outcomes	Participants	Intervention/Comparator	Results
<p>Wollina et al (2014) (111)</p> <p>Design Cluster RCT</p> <p>Country Germany</p> <p>Quality [++]</p>	<p>Objectives To assess the effects of regular education of parents as a tool in the primary prevention of acquired melanocytic naevi (MN) in their children.</p> <p>Outcomes and outcome measurement Total melanocytic naevi (MN) count after 1, 2 and 3 years A standard protocol was used to evaluate MN. The DB-MIPS mobile analyser for skin cancer was used for objective analysis of MN.</p>	<p>Children</p> <p>Sample size 395</p> <p>Age 3</p> <p>Gender NR</p> <p>Ethnicity NR</p>	<p>Intervention Standard care + regular MN checkups and digital imaging plus additional guidance about sun-protection; regular parent meetings with a dermatologist; printed material.</p> <p>Comparators Standard care + regular MN checkups and digital imaging.</p>	<p>Total MN count (mean (SD)) at year 1: Intervention: 7.19±4.55 Control: 6.84±4.63 There was a significant increase in MN counts for both groups at T2 and T3 compared with T1.</p>

Study details	Objectives and outcomes	Participants	Study methods	Results	Comments
<p>Woolley (2008) (92)</p> <p>Design Survey</p> <p>Country Australia</p> <p>Quality [-]</p>	<p>Objectives To determine whether the mandatory use of sun protection in outdoor workers was associated with a reduction in sun damage when compared with employees who were voluntarily responsible for their own sun protection. To investigate whether mandatory sun protection for outdoor workers in tropical regions (North Queensland) is associated with reduced sun damage</p> <p>Outcomes and outcome measurement Knowledge of causes of skin cancer measured by questionnaire. Attitudes/beliefs towards sun exposure and using sun protection measured by questionnaire.</p>	<p>Outdoor workers (defined as a minimum of 30 minutes out in the sun on a usual workday).</p> <p>Sample size 69 (47 analysed)</p> <p>Age (years) Mandatory sun-protection policy workplace: 42 (\pm 11). Voluntary sun-protection policy workplace: 44 (\pm 16).</p> <p>Gender (female) Mandatory sun-protection policy group: 11% Voluntary group: 0%</p> <p>Ethnicity NR</p>	<p>A survey of 26 employees working under mandatory sun protection policy was compared to survey of 21 employees working under voluntary sun protection policy. Questionnaire and measurements of current sun damage (level of UVR-related darkness of skin and presence of solar keratosis [SK]) on participant's right forearm and dorsum of right hand. The Main Roads Department (MRD) of Queensland was used as the organization with the mandatory sun protection policy. Q-Build was used as the organization in which employees were responsible for their own sun protection. Most employees from the mandatory sun-protection policy group did not have a family history of skin cancer (61%), had spent a mean of 20 years ($SD \pm 13$) working outdoors in the tropics, and had lived in the tropics for a mean of 36 years ($SD \pm 14$). Most of the voluntary sun-protection policy employees had a family history of skin cancer (60%), had spent a mean of 24 years ($SD \pm 14$)</p>	<p>Knowledge of causes of skin cancer (% <u>correct</u>) Mandatory policy (n = 26); Voluntary policy (n = 21); "You cannot feel UVR hitting your skin" Mandatory: 27%; Voluntary: 43%; (p= 0.252); " <u>Having tanned skin increases your risk of skin cancer</u>" Mandatory: 58%; Voluntary: 85%;(p=0.046). "Skin redness increases your risk of skin cancer" Mandatory: 42%; Voluntary : 52%; (p=0.491); "Childhood sun damage is linked to getting skin cancer" Mandatory: 62%; Voluntary: 76%; (p=0.284); "Adulthood sun damage is linked to getting skin cancer" Mandatory: 23%; Voluntary:10%; (p=0.219); "People with fairer skin have a higher risk of skin cancer" Mandatory: 89%; Voluntary: 91%; (p=0.824); "People with red hair have a higher risk of skin cancer" Mandatory: 73%; Voluntary: 62%; (p=0.414); "People with light-colored eyes have higher risk of SC" Mandatory: 23%; Voluntary: 38%; (p=0.263); "UVR is reflected mostly on hazy, partially cloudy days" Mandatory: 16%; Voluntary: 21%; (p=0.667);</p>	<p>Employees working under a voluntary sun-protection policy were less likely to state that UVR levels are extreme between 10 AM to 2 PM during winter days in the tropics (P=0.049) Employees working under a voluntary sun-protection policy were less likely to usually wear a long-sleeved shirt while out in the sun at work (P<0.001). If findings were fully adjusted for multiple comparisons, this result remained significant. Compared to workers with a mandatory policy, employees working under a voluntary sun-protection policy were more likely to state that having tanned skin increases the risk of skin cancer (P=0.046), were more likely to believe that they were susceptible to developing skin cancer (P=0.019), and were more likely to</p>

Study details	Objectives and outcomes	Participants	Study methods	Results	Comments
			<p>working outdoors in the tropics, and had lived in the tropics for a mean of 37 years (SD ± 16).</p>	<p><u>“UVR levels are extreme between 10AM and 2PM during winter days in the tropics”</u> Mandatory: 54%; Voluntary: 25%; (p=0.049); <u>“Working outdoors for more than 5 years gives you a high risk of skin cancer”</u> Mandatory: 38%; Voluntary: 15%; (p=0.095) <u>Exposure (%): Usually work more than 3 hours a day in the sun:</u> Mandatory: 69%; Voluntary: 76%; (p=0.596); <u>Usually spend more than 3 hours a day in the sun on days off:</u> Mandatory: 44%; Voluntary: 43%; (p=0.938); <u>Sun protective behaviours (% who agree):</u> <u>“I usually wear a Long-sleeved shirt when out in the sun at work”</u> Mandatory: 81%; Voluntary: 29%; (p<0.001); <u>“I usually wear a Wide-brimmed hat when out in the sun at work”</u> Mandatory: 69%; Voluntary: 62%; (p=0.598); <u>“I usually wear sunscreen when out in the sun at work”</u> Mandatory: 45%; Voluntary: 38%; (p=0.085); <u>“When out in the sun for a significant time on my days off: I usually wear a long-sleeved shirt”:</u> Mandatory: 19%; Voluntary: 32%; (p=0.341); <u>“I usually wear a wide-brimmed hat”</u> Mandatory: 54%; Voluntary: 53%; (p=0.936); <u>“I usually use sunscreen”:</u></p>	<p>believe that long-sleeved shirts were more hot and uncomfortable than short-sleeved shirts (P=0.049). No significant differences</p>

Study details	Objectives and outcomes	Participants	Study methods	Results	Comments
				<p>Mandatory: 27%; Voluntary: 26%; (p=0.964).</p> <p><u>Attitudes towards sun exposure and using sun protection (mean SD of ratings between 1 [not at all] and 4 [very much])</u></p> <p><u>"I enjoy being out in the sun"</u> Mandatory: 2.9 ± 0.8; Voluntary: 2.7 ± 1.1; (p=0.634);</p> <p><u>"I look better with a suntan"</u> Mandatory: 2.1 ± 0.9; Voluntary: 1.8 ± 0.9; (p=0.202);</p> <p><u>"I feel better with a suntan"</u> Mandatory: 2.0 ± 0.9; Voluntary: 1.7 ± 0.9; (p=0.226);</p> <p><u>"I am susceptible to skin cancer"</u> Mandatory: 2.6 ± 0.9; Voluntary: 3.2 ± 0.8; (p=0.019);</p> <p><u>"Long-sleeved shirts are more hot and uncomfortable than short sleeve"</u> Mandatory: 2.0 ± 1.0; Voluntary: 2.7 ± 1.2; (p=0.049);</p> <p><u>"Using sun protection reduces your risk of skin cancer"</u> Mandatory: 3.4 ± 0.7; Voluntary: 3.1 ± 0.8; (p=0.193);</p> <p><u>"A suntan is useful to prevent peeling"</u> Mandatory: 2.3 ± 1.0; Voluntary: 2.1 ± 0.9; (p=0.447);</p> <p><u>"Regular sun exposure is an acceptable risk"</u> Mandatory: 2.1 ± 1.1; Voluntary: 1.9 ± 1.2; (p=0.706);</p> <p><u>"Benefits of a suntan outweigh the risks"</u> Mandatory: 1.8 ± 0.7; Voluntary: 1.8 ± 0.8; (p=0.865);</p> <p><u>"Benefits of wearing a Long-sleeved shirt outweigh the inconveniences"</u> Mandatory: 3.4 ± 1.1; Voluntary: 3.3 ± 1.0;</p>	

Study details	Objectives and outcomes	Participants	Study methods	Results	Comments
				<p>($p=0.806$); <u>“Benefits of wearing a Wide-brimmed hat outweigh the inconveniences”</u> Mandatory: 3.4 ± 1.1; Voluntary: 3.3 ± 1.1; ($p=0.726$); <u>“Benefits of a using sunscreen outweigh the inconveniences”</u> Mandatory: 3.1 ± 1.1; Voluntary: 3.4 ± 0.9; ($p=0.422$); <u>“My employer is serious about skin cancer prevention”</u> Mandatory: 3.7 ± 0.6; Voluntary: 3.3 ± 0.8; ($p=0.067$); <u>“I hear a lot about skin cancer from my employer”</u> Mandatory: 3.2 ± 0.9; Voluntary: 2.6 ± 0.9; ($p=0.013$) <u>Knowledge of prevention of skin cancer (% correct)</u> <u>“A cap does not provide adequate protection for the face”</u> Mandatory: 89%; Voluntary: 91%; ($p=0.824$). <u>“People with olive skin can still get multiple skin cancer”</u> Mandatory: 42%; Voluntary: 43%; ($p=0.970$); <u>“Sunscreen by itself is not adequate sun protection”</u> Mandatory: 77%; Voluntary: 86%; ($p=0.446$); <u>“You should apply sunscreen 20 minutes before you go out in the sun”</u> Mandatory: 39%; Voluntary: 55%; ($p=0.264$)</p>	

Data extraction of cost-effectiveness studies

Study Details	Population and setting:	Intervention/Comparator	Outcomes and methods of analysis	Results	Notes
<p>Authors: Hirst et al</p> <p>Year: 2012</p> <p>Aim of study: To investigate the lifetime health costs and benefits of sunscreen promotion in the primary prevention of skin cancers, including melanoma.</p> <p>Type of economic analysis: CUA</p> <p>Economic perspective: Societal (household and public health provider)</p> <p>Quality Score: ++</p> <p>Applicability: Partially applicable</p>	<p>Source population: Australian. Developed public healthcare system. Mean age in analysis 49.</p> <p>Setting: Community.</p> <p>Data sources: Effectiveness and resource use from one RCT (Nambour Skin Cancer Prevention Trial). Costs and additional resource use from published sources.</p>	<p>Intervention/s description: Promotion of daily sunscreen use with detailed guidance and provision of suncream</p> <p>Comparator/control's description: Sunscreen use at own discretion</p> <p>Sample size: 1621</p>	<p>Outcomes: QALYs</p> <p>Time horizon: Up to 75 years</p> <p>Discount rates: Costs: 5% pa Benefits: 5%pa</p> <p>Perspective: Utility values from the perspective of patients and 'experts'</p> <p>Measures of uncertainty: Sensitivity analysis undertaken for all cost and effectiveness parameters based upon the effectiveness trial and published evidence. PSA undertaken. Scenario analysis looked at including squamous cell carcinoma (SCC) as a possible occurrence in stage IV melanoma</p> <p>Modeling method: Markov model with 6 melanoma stages (including no melanoma) and death.</p>	<p>Primary analysis: ICER of \$42,614/QALY</p> <p>Secondary analysis: At \$50,000/QALY the intervention is cost effective for - individuals aged 38 to 64; annual melanoma risk of at least 0.09%, hazard ratio of sunscreen use no greater than 0.37. PSA showed the ICER was below \$50,000 in 64% of simulations with a median ICER of \$43,421 but mean ICER of \$724,825. Inclusion of SCC lowers ICER to \$40,890</p>	<p>Limitations identified by author: Population may be older than those who could benefit most. Assumptions had to be made on the etiology of skin cancer. Vitamin D deficiency from sun cream use was not explored.</p> <p>Limitations identified by review team: Lack of discussion of generalizability of findings to settings where there is less risk of exposure to the sun</p> <p>Evidence gaps and/or recommendations for future research: Not reported</p> <p>Source of funding: No financial support provided to authors in writing of paper.</p>

Study Details	Population and setting:	Intervention/Comparator	Outcomes and methods of analysis	Results	Notes
<p>Authors: Gordon et al</p> <p>Year: 2009</p> <p>Aim of study: To assess the value of investment in promotion of sunscreen use for prevention of basal cell carcinomas (BCCs) and squamous cell carcinomas (SCCs)</p> <p>Type of economic analysis: Cost effectiveness</p> <p>Economic perspective:</p> <p>Quality Score: ++</p> <p>Applicability: Partially applicable</p>	<p>Source population: Australian. Developed public healthcare system. Population characteristics not reported</p> <p>Setting: Community</p> <p>Data sources: Effectiveness and resource use from one RCT (Nambour Skin Cancer Prevention Trial). Costs and additional resource use from published sources. Medical services valued using Medicare fees. Bootstrapping of data to calculate mean costs.</p>	<p>Intervention/s description: Promotion of daily sunscreen use with detailed guidance and provision of sunscreen</p> <p>Comparator/control's description: Sunscreen use at own discretion</p> <p>Sample size: 1621</p>	<p>Outcomes: Skin cancers averted</p> <p>Time horizon: 5 years</p> <p>Discount rates: Discounting reported as not being necessary</p> <p>Perspective: NA</p> <p>Measures of uncertainty: One way sensitivity analysis undertaken on costs, time to visit a GP and apply sunscreen, sunscreen purchases, out of pocket expenses for GP visits and the proportion of actinic keratoses treated. Upper and lower values taken from boot strapping of trial data. PSA undertaken using distributional data from all parameters</p> <p>Modeling method: Decision tree</p>	<p>Primary analysis: Government perspective: intervention cost saving. Societal perspective: \$3,041 per skin cancer prevented or \$3.72 per person engaged by the intervention</p> <p>Secondary analysis: Cost effectiveness improves as a greater proportion of Aks are treated. Other one-way sensitivity analysis did not alter findings significantly. In all cases the government's cost saving was preserved. PSA showed a mean cost of \$3.72 per person for the intervention ranging from cost saving to \$29.52 per person</p>	<p>Limitations identified by author: High prevalence of AKs in both intervention and comparator groups coupled with high rates of spontaneous regression made inclusion in the model problematic. However, their inclusion or exclusion did not affect overall findings</p> <p>Limitations identified by review team: Lack of discussion of generalizability of findings to settings where there is less risk of exposure to the sun. Short time horizon limits applicability of findings.</p> <p>Evidence gaps and/or recommendations for future research: Not reported</p> <p>Source of funding: Not reported</p>

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<p>Authors: Shih et al</p> <p>Year: 2009</p> <p>Aim of study: To retrospective assesses the cost-effectiveness of a skin cancer prevention programme since it was introduced and assess its potential cost effectiveness as ongoing national programme both in the current format an in a upgraded format.</p> <p>Type of economic analysis: CEA</p> <p>Economic perspective:</p> <p>Quality Score: -</p> <p>Applicability: Partially applicable</p>	<p>Source population: Australian. Developed public healthcare system. Population characteristics not reported</p> <p>Setting: Not reported</p> <p>Data sources: Cancer registry comparisons for malignant melanoma and survey data for non-melanoma skin cancer (NMSC). Costs and resource use drawn from government and published sources</p>	<p>Intervention/s description: "Sunsmart" programme at same level of investment in all Australian states as in Victoria</p> <p>Comparator/control's description: "Sunsmart" programme at low invest level (current practice in states other than Victoria)</p> <p>Sample size: Not reported</p>	<p>Outcomes: DALYs and LYS</p> <p>Time horizon: 20 years</p> <p>Discount rates: Costs not discounted. Benefits discounted at 3% pa</p> <p>Perspective: NA</p> <p>Measures of uncertainty: One way sensitivity analysis undertaken on effectiveness of SunSmart, programme cost, decay rate of programme effectiveness and discount rate. PSA on all parameters undertaken</p> <p>Modeling method: Decision tree</p>	<p>Primary analysis: Government perspective: Intervention dominant. Societal perspective: \$16,000 DALY, \$22,000 LYS</p> <p>Secondary analysis: From Government perspective intervention remains dominant over range of values considered unless a worse case scenario taking most pessimistic estimates for all parameter is drawn. In this case ICER is \$130/DALY. From societal perspective sensitivity analysis shows DALY varies between \$9,000/DALY and \$34,000/DALY in the worse case scenario. The ICER is most sensitive to fluctuations in the discount rate and is insensitive to changes in the effectiveness decay rate. PSA not reported.</p>	<p>Limitations identified by author: Inability to link different levels of investment in a national programme with health outcomes. Lack of date on unnecessary removal and biopsy of non-malignant skin moles. Does not consider the link between sunlight and vitamin D.</p> <p>Limitations identified by review team: Based on historical registry data and not a controlled study. DALYs not QALYs.</p> <p>Evidence gapes and/or recommendations for future research: Not reported</p> <p>Source of funding: Cancer Council Australia</p>

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<p>Authors: Kyle</p> <p>Year: 2008</p> <p>Aim of study: To assess the health benefits and cost effectiveness of a school based intervention to teach children how to protect themselves from over exposure to the sun</p> <p>Type of economic analysis: CUA</p> <p>Economic perspective: Societal (healthcare purchaser and productivity loss)</p> <p>Quality Score: +</p> <p>Applicability: Partially applicable</p>	<p>Source population: American. Developed privately funded healthcare system. Children aged 5-15 years.</p> <p>Setting: School (primary and secondary)</p> <p>Data sources: Before and after study for intervention effectiveness. Costs for treatment from Medicare survey. Programme costs from historical funding levels.</p>	<p>Intervention/s description: SunWise programme. Includes a tool kit with classroom activities, UV-sensitive Frisbee, storybooks, posters, videos, policy guidance and other materials. Lessons in 3 areas: effects of UV radiation, risk factors for over exposure and sun protection habits.</p> <p>Comparator/control's description: Do nothing</p> <p>Sample size: 10,299</p>	<p>Outcomes: QALYs</p> <p>Time horizon: 100 years</p> <p>Discount rates: 3%pa for costs and benefits.</p> <p>Perspective: Utility values drawn from American population with and without condition.</p> <p>Measures of uncertainty: One way sensitivity analysis undertaken on behavioural retention rate, total number of classrooms participating, percentage of SunWise behaviours practiced all the time, percentage of lifetime UV exposure before age of 18 and discount rate. Different funding scenarios (continuation, increased and stopped) also explored. No PSA</p> <p>Modeling method: Decision tree</p>	<p>Primary analysis: Intervention dominates</p> <p>Secondary analysis: In all scenarios considered, except the discount rate, the intervention dominates no intervention generating QALYs and reducing societal cost. At a discount rate of 7%pa the intervention is cost incurring and would result in an ICER in excess of \$136,000/QALY</p>	<p>Limitations identified by author: Self-reporting of students for effectiveness with no control group. Not all health outcomes related to sun exposure considered. Private costs of compliance with the programme were ignored</p> <p>Limitations identified by review team: Lack of long term follow up on persistence of behavioural change</p> <p>Evidence gaps and/or recommendations for future research: Evaluation to improve the quality of effectiveness evidence</p> <p>Source of funding: US EPA</p>

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<p>Authors: Matrix Evidence</p> <p>Year: 2010</p> <p>Aim of study: To determine the cost effectiveness of interventions to prevent primary skin cancer attributable to UV exposure by changing the built environment, provision of sun protection resources or multi component interventions</p> <p>Type of economic analysis: CUA</p> <p>Economic perspective: Public sector (NHS) in all cases except workplace setting. In workplace setting perspective is from employers and public sector (NHS)</p> <p>Quality Score: +</p> <p>Applicability: Partially applicable</p>	<p>Source population: Individual interventions modeled for USA (developed privately funded healthcare system), German and Australian populations (developed publicly funded healthcare systems). Modeled populations were 0-12, 13-20, 21-80 and 21-65.</p> <p>Setting: School, swimming pools and workplaces.</p> <p>Data sources: Published studies on sun safety programmes with effectiveness modeled onto a UK specified formula of sun exposure and cancer risk</p>	<p>Intervention/s description: Three interventions modeled:</p> <ul style="list-style-type: none"> • Provision of shade. • Multi-component intervention including changes to the natural or built environment and/or provision of sun protection resources and may include provision of information. Multi component intervention was modeled in 7 settings. • A cost neutrality model to assess a mass media campaign. <p>Comparator/control's description: Do nothing</p> <p>Sample size: Not reported</p>	<p>Outcomes: QALYs</p> <p>Time horizon: 100 years</p> <p>Discount rates: Discount rate for costs not reported. 3%pa for benefits</p> <p>Perspective: Utility values derived from perspective of experts</p> <p>Measures of uncertainty: One way sensitivity analysis undertaken on effect and costs of intervention, probability of holiday in a sunnier climate, threshold for sunburn, number of sunburns, QALY loss for skin cancer (non melanoma and malignant melanoma), discount rate for health benefits and hours of occupational outdoor exposure</p> <p>Modeling method: Two stage Markov model of either protection or no protection in annual cycles</p>	<p>Primary analysis: ICERs range from £207k/QALY for a multi component intervention in a community setting (the only intervention below £1m/QALY) to £82m/QALY for a primary care based multi component intervention. For the mass media campaign the probability of sunscreen being always used would have to increase by 2 to 6.6 percentage points at £20k/QALY for the intervention to break even</p> <p>Secondary analysis: In all sensitivity analysis conducted the ICER did not closely approach £20k/QALY for any of the interventions</p>	<p>Limitations identified by author: Limited data to model behavioural and epidemiological effects of interventions. Lack of knowledge of relationship between sun exposure and skin cancer, especially in the UK.</p> <p>Limitations identified by review team: Utility values not from patient perspective.</p> <p>Evidence gaps and/or recommendations for future research: Not reported</p> <p>Source of funding: NICE</p>

Study Details	Population and setting:	Intervention/Comparator	Outcomes and methods of analysis	Results	Notes
<p>Authors: Andronis et al</p> <p>Year: 2010</p> <p>Aim of study: To determine the cost effectiveness of the provision of information to prevent skin cancer from sun exposure</p> <p>Type of economic analysis: CUA</p> <p>Economic perspective: Public sector</p> <p>Quality Score: +</p> <p>Applicability: Partially applicable</p>	<p>Source population: Unclear</p> <p>Setting: School, university and community</p> <p>Data sources: Published studies on sun safety programmes with effectiveness modeled onto a UK specified formula of UVR exposure and cancer risk.</p>	<p>Intervention/s description: Three interventions had full economic analysis. A handbook for parents. Verbal information delivered in school and verbal information delivered at university. Six studies looking at verbal advice, printed materials and mass media in children and adults were used in threshold analysis</p> <p>Comparator/control's description: Do nothing</p> <p>Sample size: Not reported</p>	<p>Outcomes: QALYs</p> <p>Time horizon: 80 years</p> <p>Discount rates: 3% pa for costs and benefits.</p> <p>Perspective: Utility values derived from perspective of experts</p> <p>Measures of uncertainty: Range of one-way sensitivity analysis undertaken for all three interventions that had full economic evaluation. These included lifetime UVR exposure under 18, persistence of behavioural change, fatality rate and QALY loss from melanoma and skin cancer cases averted. Full PSA on all parameters undertaken for all interventions</p> <p>Modeling method: Decision tree. For threshold analysis a simple calculation was performed on relative reduction in lifetime UVR for interventions to be cost effective at £0, £20k and</p>	<p>Primary analysis: Information booklet: £6,200/QALY. Verbal information in school: £260,000/QALY. Verbal information in university: £42,000/QALY. The threshold analysis suggested that the reduction in lifetime UVR for the interventions considered to be cost effective at £20k/QALY ranged from 0.006 for printed information for adults to 0.057 for 6 lessons with children</p> <p>Secondary analysis: Sensitivity analysis on a printed booklet for parents suggests an ICER of below £20,000/QALY up to an intervention cost of about £2. None of the other sensitivity analysis considered raised the ICER above £20,000/QALY accept an almost doubling in the relative frequency of sunburn or a reduction in effectiveness of about 60%.</p> <p>Across the range of</p>	<p>Limitations identified by author: Paucity of studies with behavioural outcomes and substantial assumptions needed for analysis to be undertaken. Effectiveness data may not be able to be transferred from one context to another. Assumption on persistence of effect is based on limited evidence.</p> <p>Limitations identified by review team: Utility values not from patient perspective.</p> <p>Evidence gaps and/or recommendations for future research: Study on effectiveness of intervention in a setting equivalent to UK in terms of client and culture. Studies needed with long term follow up. Need for better evidence on converting behavioural change into outcome measures.</p> <p>Source of funding: NICE</p>

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			£30k a QALY.	<p>sensitivity analysis for university provision of verbal information the ICER never fell below £20,000/QALY unless the persistence of effect doubled from four to eight years. For verbal provision in schools the ICER was so extreme no sensitivity analysis was undertaken.</p> <p>PSA of the information booklet suggested a mean ICER of £6,000/QALY with 87% of 10,000 model replications being under £20,000/QALY.</p> <p>PSA of the verbal information in schools suggested a mean ICER of £260,000/QALY with no model replications out of 10,000 being under £20,000/QALY</p> <p>PSA of the verbal information in universities suggested a mean ICER of £45,000/QALY with 6.5% of 10,000 model replications being under £20,000/QALY</p>	