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Sun Safety in Construction: A UK Intervention Study

Abstract

Background: Interventions to promote sun safety in the UK construction sector are warranted given the high incidence of skin cancer attributable to sun exposure relative to other occupational groups.

Aims: To evaluate change in sun safety knowledge and practices among construction workers in response to an educational intervention.

Methods: A baseline questionnaire was administered, followed by a bespoke sector-specific DVD-based intervention. At 12-month follow-up participants completed a further questionnaire.

Results: Analyses were conducted on a sample of 120 workers (intervention group, $n = 70$; comparison group, $n = 50$). At follow-up the proportion of intervention group participants that reported correct sun safety knowledge was not significantly greater than at baseline. However, the intervention group demonstrated significant positive change on nine out of ten behavioural measures, the greatest change being use of a shade/cover when working in the sun followed by regularly checking skin for moles or unusual changes.

Conclusions: Exposure to this intervention was linked to some specific positive changes in construction workers' self-reported sun safety practices. These findings highlight the potential for educational interventions to contribute to tackling skin cancer in the UK construction

sector. The findings support the development of bespoke educational interventions for other high-risk outdoor worker groups.

Keywords: Construction, intervention, skin cancer, solar radiation, sun safety, transtheoretical model.

Introduction

Solar ultraviolet radiation (UVR) is a leading contributor to the development of skin cancer[1,2], with data for 2010 indicating that solar UVR was responsible for an estimated 90% of cases of melanoma in men in the UK[3]. Skin cancer is the most common type of cancer in the UK and on the rise[4]. Registration data for England show a 56% increase in melanoma skin cancer for men between 2002 and 2011[5] and the incidence rate for non-melanoma skin cancer appears to be rising faster in the UK than in the rest of Europe[6]. Estimates for England for 2008 place the cost of skin cancer to the NHS at £106-£112 million; on the basis of the current trajectory it is estimated that by 2020 the cost to the NHS will exceed £180 million[7].

Outdoor workers are at significantly increased risk for skin cancer attributable to solar UVR [8,9]. Data reported by physicians between 2002 and 2008 to The Health and Occupation Reporting Network (THOR) showed that for skin neoplasia, male UK construction industry workers aged under 65 had a significantly raised standardised incidence rate ratio relative to all other UK industries combined (SRR 4.2, 95% CI 3.3-5.3). Exposure to solar UVR was the suspected causal factor in all but a single reported case[10], with the risk being particularly high among roofers, painters and decorators, and labourers in the building and woodwork trades[11]. On the basis of incidence data from 2011 and mortality data from 2012 it has been estimated that occupational exposure to solar UVR results in 46 deaths and 239 new cases of malignant melanoma in a typical year in Britain, with the construction industry accounting for 44% of the deaths and 42% of the registrations [12]. Sun safety knowledge and use of protective and precautionary practices are low within the UK construction sector[13]. This indicates that relatively simple interventions could result in significant positive health outcomes.

Sun safety interventions targeted at construction workers and other manual outdoor worker groups (e.g. those laying water pipes or electricity cables) have successfully produced improvements in knowledge, attitudes, and self-reported behaviours [14-18]. However, no sun safety intervention studies have been conducted in the UK construction sector and it is not clear whether the existing results can be generalised to this group. All published intervention work has been conducted in Australia and Israel, countries with more intense and prolonged periods of sunshine than the UK, and findings therefore may not transfer into the UK context. Furthermore, due to an established sun safety culture in Australia[19], pre-intervention attitudes towards sun protection might differ significantly from those held in the UK.

The high incidence of skin cancer attributable to solar UVR among construction workers in the UK coupled with their low levels of sun safety knowledge and associated risk-reduction practices highlight a need for effective interventions. The aim of this study therefore was to examine the effectiveness of a DVD-based sun safety educational intervention designed specifically for the UK construction context. Several factors informed the decision to focus on a film-based intervention. First, these have been shown to be effective in promoting sunscreen knowledge and usage and rated by study participants more positively than alternative intervention media such as leaflets[20,21]. Second, film-based interventions can be created at relatively little cost and delivered quickly in the workplace with little disruption to work activities. Third, they can be administered without expert knowledge on the part of the administrator.

Methods

The intervention was a 12-minute DVD titled *Sun Safety in Construction: A Workplace Health Guidance Film*. It was developed as a low-cost educational intervention that could be readily integrated into occupational safety and health briefings on all types of construction

sites. The intervention is now freely available at http://www.notime-tolose.org.uk as part of the Institution of Occupational Safety and Health's (IOSH) 'No Time To Lose' occupational cancer-reduction campaign. The intervention addressed the risk of skin cancer in the UK construction sector, sun safety practices that might be adopted on construction sites, and self-checking of skin for early signs of skin cancer.

Construction companies were contacted through the personal contacts of the research team in addition to advertisements in trade magazines and presentations to industry bodies. The baseline questionnaire was administered in work time during health and safety briefings in participating organisations (N = 22) between May and August 2012. Questionnaire completion and return was incentivised by a prize draw to win a sports car driving experience. A stamped addressed envelope was provided with each questionnaire for participants to return completed questionnaires directly to the research team. The project champion in each organisation was provided with a copy of the intervention and instructed to administer this only after administration and completion of the baseline questionnaire; in most cases these activities took place on the same day or within a few days of one another. Respondents who provided their contact details on the baseline questionnaire were sent a follow-up questionnaire along with a stamped addressed return envelope in the summer of 2013. The mean lag between completion of baseline and follow-up questionnaires was 12 months.

The study included an emergent comparison group, comprising workers who completed the baseline questionnaire and follow-up questionnaire but who did not receive the intervention[22]. Group membership was established via an item on the follow-up questionnaire that assessed intervention exposure. Reasons for not having received the intervention are unlikely to be related to self-selection. Instead these included work scheduling requirements, absence or working off-site at the time of intervention

administration, or staff turnover in the period between baseline questionnaire administration and intervention administration. The emergent design was adopted for three reasons. First, all participating companies wanted to deliver the intervention as quickly as possible ruling out the possibility of populating a sizable and representative wait-list comparison group. Second, it was thought unlikely that all employees who completed both the baseline and follow-up questionnaires would be present on the day of intervention administration for operational reasons and due to the transitory nature of the workforce. These reasons for participants being members of the comparison group were unlikely to be related to intervention effectiveness. Third, evidence from previous sun safety intervention studies suggests that it is typical that some participating organisations fail to correctly administer the intervention[23]. Therefore the design reduced the risk of a type III error (erroneously concluding that an intervention was unsuccessful when many participants had not received the intervention as intended).

Respondents' sun safety knowledge was assessed using five items (Table 2) adapted from Patel et al.[24]. Respondents indicated whether they agreed or disagreed with each statement. We also examined respondents' self-reported use of a set of ten sun safety practices (Table 3) previously identified as the primary measures typically available to outdoor workers[25]. This behaviour was assessed in accordance with Prchaska and DiClemente's transtheoretical model of behaviour change[26]. In this model individuals pass through five stages of change in relation to a particular behaviour. Respondents indicated which of five statements best described their usual behaviour for each facet of sun safety. The five response options were '*I do not do this and I am not thinking about starting'* (pre-contemplation stage) (1), '*I do not do this but I am thinking about starting'* (contemplation stage) (2), '*I do not do this but am planning to start in the next month'* (preparation stage) (3), *'I do this but have only begun to do so this year'* (action stage) (4), *'I do this and have done so for more than a year'* (maintenance stage) (5). The questionnaire was also used to collect data on socio-

demographic and occupational factors (Table 1).

Pearson's chi-square test was used to examine the statistical significance of the link between self-reported intervention exposure and changes in knowledge correctness. For each knowledge domain we compared the proportion of participants (intervention versus comparison) that were incorrect at baseline and then correct at follow up. For each behavioural domain the significance of change in the mean score on the stage of change measure was examined using a repeated measures t-test in both the intervention and comparison groups. The proportion of respondents in the action or maintenance stage of change in each group at follow-up was also examined to identify the number of participants crossing the thresholds from inaction to action/maintenance. This approach to reporting is consistent with that employed in previous sun safety intervention studies [16,17,27].

A research ethics committee at the University of Nottingham granted ethical approval for the study and the research adhered to the British Psychological Society's Code of Ethics and Conduct[28].

Results

A total of 1,279 workers returned a completed baseline questionnaire, with 906 respondents (71%) providing contact details. A total of 160 respondents returned a completed baseline and follow-up questionnaire, generating an 18% retention rate (Table 1). No evidence of response bias was evident in terms of significant differences between follow-up questionnaire responders and non-responders for gender, age, skin type, and skin cancer experience. For location, completed follow-up questionnaires were returned from across Britain; none were returned from Northern Ireland. For occupational characteristics similar proportions of responders and non-responders indicated that they had received sun safety training at some point in the past. However, non-responders worked outdoors for significantly

more hours on a typical day $M = 6.6$; $SD = 3.3$ vs $M = 4.4$; $SD = 3.6$; $p<0.001$) and were more likely to report that sunscreen was provided in their workplace (58% vs 46%; $p<0.01$).

Forty cases were deleted due to no outdoor work being reported or no information given on intervention exposure. Analyses were conducted on a final sample of 120 cases (emergent intervention group $n = 70$; emergent comparison group $n = 50$). There were no significant pre-intervention differences between the knowledge and practices reported by the two groups.

[Insert Table 1 about here]

Table 2 shows the percentage of respondents in the emergent intervention and comparison groups that reported correct knowledge on each knowledge domain at baseline and 12-month post-intervention follow-up. The intervention group did not demonstrate significant positive change across the five indices of sun safety knowledge.

[Insert Table 2 about here]

Table 3 shows the mean scores on the stages of change measures for each sun safety practice along with the percentage of respondents that reported being in the action or maintenance stage of change. The intervention group demonstrated significant positive change on nine behavioural measures compared to two for the comparison group. The strongest changes, which exceeded a movement of 20% of the intervention group into the action/maintenance stage were as follows: the use of a shade/cover when working in the sun, regular checking of skin for moles or unusual changes, rotating job tasks to minimize amount of time spent working in the sun, wearing sunglasses, and minimizing work in direct sunlight in the middle of the day. The emergent comparison group demonstrated significant positive change on two measures: regularly check skin for moles or unusual changes and drink plenty of water. This may be because those in the comparison group worked significantly more hours outside on a typical working day (see Table 1).

[Insert Table 3 about here]

Discussion

This study found that self-reported exposure to a sun safety intervention delivered to UK constructions workers was associated with movement into action or maintenance stages of activity for important sun safety practices. Knowledge change was not significant, perhaps partly because of a ceiling effect caused by high levels of baseline knowledge. Nonetheless, this study shows that the intervention could have a significant behavioural impact in groups with pre-existing good levels of knowledge.

The findings suggest that this type of intervention could help to reduce the incidence of skin cancer in UK construction and might usefully form one element of organisations' legal duty to reduce hazard exposure. The effectiveness of a video-based sector-specific intervention suggests that similar sun safety interventions could be developed for other high-risk outdoor worker groups particularly in industries such as farming (8% of skin cancer registrations) and those in the defence sector (16%)[29].

Though the positive self-reported change in behavior seen in the current study is welcome it is noteworthy that at follow-up one third or more of intervention group participants remained in the pre-action stages of change on six of the ten indices. This indicates that a video-based intervention of this type might be insufficient to generate comprehensive sun safety adherence when applied in isolation or when many participants are in pre-contemplation or contemplation stages. Future studies might usefully examine (a) the extent to which multi-faceted interventions might generate positive change, (b) the impact of employer leadership and enforcement on compliance rates and the development of a culture of sun safety in the sector, and (c) the influence of policies that stipulate requirements to implement sun safety interventions in tender specifications. Product availability is also likely to influence behaviour change; it is possible that employer- and government-led efforts on

sun safety could incentivise manufacturers and distributors into supplying high-risk sectors.

The naturally occurring comparison group design proved an effective means by which to create a comparison group while avoiding the requirement for participating organisations to join a wait-list comparison group and thereby potentially increasing employees' exposure to risk. One of the interesting methodological findings of this study is that the emergent comparison group was of almost equal size to the intervention group. Such study designs can be very useful when evaluating occupational health interventions when exposure to interventions cannot be easily controlled nor systematically denied to participants who may benefit from them. It also underlines the importance of monitoring intervention exposure.

It is important to note some potential limitations that should be addressed in future research. First, due to the widespread use of subcontracting in the construction industry we do not have information on how many workers received the baseline questionnaire, thus preventing the calculation of a response rate.

Second, the 18% participant retention rate resulted in a small dataset being available for analysis. This may have raised the risk of type II error, i.e. a failure to detect significant change especially given high levels of baseline knowledge in this sample. The low retention rate may have been due to the transitory nature of the workforce and typically low tenure in construction work which necessitated that the follow-up questionnaire was sent to participants' home address as opposed to having being administered in the workplace where work time was allocated for its completion. It might also reflect the low priority placed on sun safety by construction workers in the UK. Future sun safety intervention studies with outdoor workers might achieve a better retention rate by administering all questionnaires in controlled conditions in the workplace.

Third, baseline data were collected in the summer of 2012, the wettest in the UK since records began in 1910[30]. As such, respondents might have reported greater use of sun

safety measures post-intervention owing to contrasting climactic conditions between baseline and follow-up data collection. However, under the same meteorological conditions the comparison group showed no change or change of lesser magnitude on most sun safety practices. In order to control for the possible confounding effects of meteorological differences pre- and post-intervention, future studies ought to run over a period of several years.

Fourth, it is possible that respondents incorrectly recalled whether or not they had been exposed to the intervention, resulting in misclassification into the intervention group or comparison group. We consider a large amount of misclassification to be unlikely for two reasons: First, video-based occupational health interventions are rare in the UK construction sector. Second, the video contained some humorous elements in order to engage the viewer. Both of these factors are likely to have helped the film stick in respondents' minds suggesting that it would be unlikely for a respondent to incorrectly recall whether or not they had viewed the film.

Fifth, it is also possible that the behaviour of comparison group participants was influenced by that of the intervention group. For example, if a worker who viewed the DVD subsequently used sunscreen when working outdoors, and that individual worked alongside someone who had not viewed the DVD, it is possible that the sun safety practices of the latter individual might have been influenced by the former. This could help to explain improvements in sun safety practices among emergent comparison group participants.

Finally, the intervention was of a one-size-fits-all type rather than stage-matched and tailored to the needs of participants in particular stages of change. Future studies could usefully explore the development of stage-matched interventions for construction workers.

This study provides an initial evidence base for the efficacy of sun safety interventions for manual outdoor workers in geographical contexts that experience relatively

few sunshine hours and high cloud levels during summer months and where there exists an under-developed sun safety culture. The findings, considered in tandem with statistical data on skin cancer attributable to occupational solar UVR exposure[12], suggest that employers of outdoor workers in such regions should administer sun safety interventions within their provision for occupational health protection and promotion.

Key points:

- Interventions to promote sun safety in the UK construction sector are warranted given the high incidence of skin cancer attributable to solar ultra violet radiation exposure.
- Exposure to an educational intervention was linked to positive change in construction workers' self-reported sun safety practices at 12-month follow-up.
- This study highlights the potential for practical and inexpensive sun safety interventions for high-risk manual outdoor worker groups in geographical contexts that experience relatively few sunshine hours and high cloud levels during summer months and where there exists an under-developed sun safety culture.

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References

1. Ichihashi M, Budiyanto A, Bito T, *et al*. UV-induced skin damage. *Toxicol* 2003;189:21-39.
2. Polefka T, Meyer T, Agin P, *et al*. Effects of solar radiation on the skin. *J Cosmet Dermatol* 2012;11:134-143.
3. Parkin D, Mesher D, Sasieni P. Cancers attributable to solar (ultraviolet) radiation exposure in the UK in 2010. *Brit J Cancer* 2011;105(Supple 2):S66-S69.
4. Cancer Research UK (2014). *Skin cancer statistics*. http://www.cancerresearchuk.org/cancer-info/cancerstats/types/skin/ (11 December 2014, date last accessed)
5. Office for National Statistics. *Cancer Registration Statistics, England, 2011*. Office for National Statistics. 2013. http://www.ons.gov.uk/ons/dcp171778_315795.pdf (12 November 2014, date last accessed)
6. Lomas A, Leonardi-Bee J, Bath-Hextall F. A systematic review of worldwide incidence of nonmelanoma skin cancer. *Brit J Dermatol* 2012;166:1069-1080.
7. Vallejo-Torres L, Morris S, King J, *et al*. Measuring current and future cost of skin cancer in England. *J Public Health* 2013;36:140-148.
8. Lucas R, McMichael A, Smith W, et al. *Solar Ultraviolet Radiation. Environmental Burden of Disease Series No. 3*. Geneva: WHO, 2006.
9. Schmitt J, Seidler A, Diepgen T, *et al*. Occupational UV-light exposure increases the risk for the development of cutaneous squamous cell carcinoma: A systematic review and meta-analysis. *Brit J Dermatol* 2011;164:291-307.
10. Stocks SJ, McNamee R, Carder M, Aguis R. The incidence of medically reported work-related ill-health in the UK construction industry. *Occup Environ Med* 2010;67:574-6.

11. Stocks SJ, Turner S, McNamee R, *et al*. Occupation and work-related ill-health in UK construction workers. *Occup Med (Lond)* 2011;61:407–415.
12. Rushton L, Hutchings S. *The burden of occupational cancer in Great Britain: Cutaneous malignant melanoma and occupational exposure to solar radiation. Institution of Occupational Safety and Health*. 2015. http://www.iosh.co.uk/~/media/Documents/Books%20and%20resources/Skin%20cancer/POL2756%20-%20Cutaneous%20Malignant%20Melanoma%20Technical%20Full%20Report%20140415.ashx (27 April 2015, date last accessed).
13. Madgwick P, Houdmont J, Randall R. Sun safety measures among construction workers in Britain. *Occup Med (Lond)* 2011;61:430-433.
14. Azizi E, Flint P, Sadetzki S, *et al*. A graded work site intervention program to improve sun protection and skin cancer awareness in outdoor workers in Israel. *Cancer Cause Control* 2000;11:513-521.
15. Borland RM, Hocking B, Godkin GA, et al. The impact of a skin cancer control education package for outdoor workers. *Med J Aust* 1991;154:686-688
16. Girgis A, Sanson-Fisher R, Watson A. A workplace intervention for increasing outdoor workers' use of solar protection. *Am J Public Health* 1994;84:77-81.
17. Rye S, Janda M, Stoneham M, *et al*. Changes in outdoor workers' sun-related attitudes, beliefs, and behaviors. *J Occup Environ Med* 2014;56:e62-72.
18. Woolley T, Lowe J, Raasch B, *et al*. Workplace sun protection policies and employees' sun-related skin damage. *Am J Heath Behav* 2008;32:201-208.
19. Garvin T, Eyles J. Public health responses for skin cancer prevention: The policy framing of sun safety in Australia, Canada and England. *Soc Sci Med* 2001;53:1175-1189.

20. Armstrong AW, Idriss NZ, Kim RH. Effects of video-based, online education on behavioral and knowledge outcomes in sunscreen use: a randomized controlled trial. *Patient Educ Couns* 2011;83:273–277.
21. Tuong W, Larsen E, Armstrong A. Videos to influence: A systematic review of effectiveness of video-based education in modifying health behaviors. *J Behav Med* 2014;37:218-233.
22. Randall R, Griffiths A, Cox T. (2005). Evaluating organizational stress-management interventions using adapted study designs. *Eur J Work Organ Psy* 2005;14:23-41.
23. McIver J, Rock V. *Mystery shopping: A process evaluation of an innovative skin cancer prevention campaign*. Paper presented at the Second International Conference on UV and Skin Cancer Prevention. Berlin, 10-13 September 2013.
24. Patel S, Nijhawan R, Stchschulte S, *et al*. Skin cancer awareness, attitude, and sun protection behavior among medical students at the University of Miami Miller School of Medicine. *Arch Dermatol* 2010;146:797-800.
25. Young C. Solar ultraviolet radiation and skin cancer. *Occup Med (Lond)* 2009;59:82–88.
26. Prochaska J, DiClemente C. *The transtheoretical approach: Crossing the traditional boundaries of change*. Homewood, IL: J. Irwin, 1984.
27. Weinstock M, Rossi J, Redding C, *et al*. Randomized controlled community trial of the efficacy of a multicomponent stage-matched intervention to increase sun protection among beach goers. *Prev Med* 2002;35:584–92.
28. British Psychological Society. *Code of Ethics and Conduct*. London: British Psychological Society, 2009.

29. Rushton L, Bagga S, Bevan R, *et al*. *The burden of occupational cancer in Great Britain: Overview Report*. Research Report RR931. Health and Safety Executive. 2012. http://www.hse.gov.uk/research/rrpdf/rr931.pdf (Accessed 12 November 2014).
30. BBC. *Rainy weather breaks UK record for three months to June*. http://www.bbc.co.uk/news/uk-18653274 (Accessed 14 May 2015)

Table 1

Participants' Socio-demographic and Occupational Characteristics

	Emergent Intervention Group	Emergent Comparison Group
Socio-demographic characteristics		
Age, *M* (SD)	41.2 (12.3)	45.8 (11.6)*
Gender, *n* (%)		
Male	66 (94)	48 (96)
Female	4 (6)	2 (4)
Location, *n* (%)		
South East	6 (9)	10 (20)^
London	3 (4)	1 (2)
South West	2 (3)	3 (6)
East Anglia	1 (1)	--
Midlands	17 (24)	8 (16)
North	25 (36)	9 (18)
North East	13 (19)	9 (18)
North West	1 (1)	5 (10)
Scotland	1 (1)	2 (4)
Wales	1 (1)	2 (4)
Not specified	--	1 (2)
Skin Type, *n* (%)		
Very pale	1 (1)	4 (8)^
Fair/pale	29 (41)	24 (48)
Fair/beige	21 (30)	14 (28)
Olive/light brown	18 (26)	6 (12)
Dark brown	1 (1)	1 (2)
Black	--	--
Not specified	--	1 (2)
Had skin cancer, *n* (%)		
Yes	--	1 (2)^
No	70 (100)	49 (98)
Family member or close friend had skin cancer, *n* (%)		
Yes	12 (17)	10 (20)^
No	58 (83)	40 (80)
Occupational characteristics		
Hours spent working outdoors on a typical day, *M* (SD)	4.4 (2.8)	5.9 (4)**
Sunscreen supplied at workplace, *n* (%)		
Yes	35 (50)	24 (48)
No	34 (49)	23 (46)
Not specified	1 (1)	3 (6)
Ever received training on the risks of working in the sun, *n* (%)		
Yes	20 (29)	22 (44)
No	50 (71)	27 (54)
Not specified		1 (2)

Notes: ^Insufficient cases to permit significance testing.

*p<0.05, **p<0.01.

Table 2

Correct Knowledge on Sun Safety at Pre- and Post-Intervention

	Emergent Intervention Group			Emergent Comparison Group		
	Baseline Correct *n* [valid cases]	Follow-up Correct *n* [valid cases]	% Change [a]	Baseline Correct *n* [valid cases]	Follow-up Correct *n* [valid cases]	% Change [a]
Need for sunscreen on a cloudy day	33 [70]	56 [69]	+33	30 [49]	38 [50]	+16
Need to wear sunglasses to protect eyes	56 [69]	67 [70]	+16	42 [50]	43 [50]	+2
Awareness of sun exposure as a risk factor for skin cancer	61 [69]	67 [70]	+9	46 [50]	43 [50]	-6
Need to apply sunscreen more than once per day	52 [69	57 [70]	+7	36 [50]	44 [50]	+16
Need for sun protection when working outdoors for less than one hour	7 [69]	6 [70]	-1	9 [50]	6 [50]	-6

Note. [a] We compared change in correctness in the intervention and comparison groups. Using chi-squared we compared the proportion of participants (intervention versus comparison) that were incorrect at baseline and then correct at follow up.

Note. All changes failed to reach statistical significance at $p<0.05$.

Table 3

Sun Safety Practices on a Typical Summer Workday at Pre- and Post-Intervention

	Emergent Intervention Group			Emergent Comparison Group		
	Baseline mean (% in action/maintenance stage)	Follow-up mean (% in action/maintenance stage)	Mean change [valid cases] (% change into action/maintenance stage)	Baseline mean (% in action/maintenance stage)	Follow-up mean (% in action/maintenance stages)	Mean change [valid cases] (% change into action/maintenance stages)
Use a shade/cover when working in the sun	2.31 (26)	3.34 (59)	1.03*** [67] (+33)	2.36 (32)	2.57 (31)	.21 [42] (-1)
Regularly Check Skin for Moles or Unusual Changes	3.13 (52)	4.07 (79)	.94*** [67] (+27)	3.21 (49)	4.11 (76)	.90** [47] (+27)
Rotate Jobs to Minimise Time Working in the Sun	1.98 (22)	2.85 (46)	.87*** [66] (+24)	1.93 (20)	2.24 (30)	.31 [42] (+10)
Wear sunglasses	3.00 (50)	3.84 (72)	.84*** [64] (+22)	3.53 (62)	3.55 (61)	.02 [47] (-1)
Minimise Work in Direct Sunlight in Middle of the Day	2.29 (28)	3.06 (49)	.77** [66] (+21)	2.33 (29)	2.72 (40)	.39 [43] (+11)
Use Sunscreen	3.49 (60)	4.02 (77)	.53* [68] (+17)	3.66 (64)	4.06 (76)	.40 [47] (+12)
Wear long-sleeved loose-fitting top and trousers	2.87 (46)	3.50 (60)	.63** [68] (+14)	3.31 (58)	2.98 (46)	-.33 [48] (-12)
Check Daily UV Index	1.77 (13)	2.20 (23)	.43* [66] (+10)	1.53 (4)	1.64 (10)	.11 [45] (+6)

Wear a safety helmet with neck protection	2.02 (21)	2.46 (30)	.44* [63] (+9)	2.04 (20)	2.04 (21)	.00 [46] (+1)
Drink Plenty of Water	4.60 (91)	4.67 (93)	.07 [67] (+2)	4.47 (87)	4.85 (98)	.38* [47] (+11)

*p<0.05, **p<0.01, ***p<0.001.