

DR. PHILIPPA DICKISON (Orcid ID : 0000-0002-1582-549X)

Received Date : 11-Oct-2016

Revised Date : 06-Jan-2017

Accepted Date : 15-Jan-2017

Article type : Research Letter

Australia has one of the world's highest incidences of melanoma, second only to New Zealand [1]. Additionally, non-melanoma skin cancer (NMSC) represents a significant burden to Australia and remains the most common and costly skin cancer in Australia [2, 3].

In 2015 Lee et al [4] demonstrated that the sun protection behaviours of many Australians were inadequate. **This** study's objectives were to evaluate the sun protection behaviours of Australian doctors; identify weakness in their understanding of sun protection; and to assess their awareness of trends in melanoma and NMSC.

An invitation to participate in a cross-sectional study was sent by email to NSW members of the Australian Medical Association (AMA) in March, 2016. Statistical analyses were performed using descriptive statistics, chi-square test and binary logistical regression with SPSS v22. A *p*-value of 0.05 or less was considered significant.

The survey was distributed to 5753 email addresses in the NSW AMA database. A total of 588 (10.2%) completed the survey (Table 1).

There was a **significant** relationship between frequency of sunburn and age ($p<0.001$) and a direct relationship between history of skin cancer and age ($p<0.001$) (Table 2). Fitzpatrick skin type I or II was associated with a significantly increased likelihood of sunburn ($p<0.001$), skin cancer ($p=0.002$) and increased likelihood to self-examine for skin cancer ($p<0.001$).

Participants who reported having a previous skin cancer were significantly less likely to have been sunburnt in the preceding 12 months (odds ratio [OR] 0.49; 95% CI 0.32-0.73; $p=0.001$). They were also more likely to perform self-examination for skin cancer (OR 5.69; 95% CI 2.90-11.16; $p<0.001$), use long sleeves (OR 1.75; 95% CI 1.18-2.61; $p=0.006$) or hats (OR 5.09; 95% CI 2.17-11.93; $p<0.001$) for sun protection.

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the [Version of Record](#). Please cite this article as [doi: 10.1111/ajd.12636](https://doi.org/10.1111/ajd.12636)

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Compared to other age groups, participants aged 18-30 years were less likely to apply sunscreen because: they forget ($p<0.001$), they intend to tan ($p<0.001$), sunscreen's greasiness ($p<0.001$), it causes acne ($p<0.001$) or that application is time consuming ($p<0.001$). Participants >60-years were significantly less likely to apply sunscreen everyday ($p<0.001$) (Table 3).

Men were significantly less likely to use sunscreen (OR 0.19; 95% CI 0.07-0.57; $p=0.03$) and were more likely to only apply sunscreen when partaking in outdoor activities (OR 2.639; 95% CI 1.801-3.867; $p<0.001$). Women were more likely to apply sunscreen every day (OR 4.16; 95% CI 2.586-6.698; $p<0.001$).

Participants >60 years were significantly less likely to correctly identify that sunscreen should be applied every 2 hours ($p=0.05$), 20 minutes before going into sunlight ($p<0.001$), after swimming ($p=0.007$) or after sweating ($p=0.001$). They were also less likely to correctly identify that risk factors for skin cancer included past history of skin cancer ($p<0.001$) and medications ($p<0.001$).

Three hundred and five (51.9%) participants were aware that sunscreen denatures above 25 degrees Celsius. This knowledge increased significantly with age ($p<0.001$). Only 81 (13.8%) participants reported applying adequate amounts of sunscreen, calculated by the amount of sunscreen required to cover the surface area of an average man (1.8m²) at the required thickness of 2mg/cm² [5].

Our data demonstrates that gender and age contribute significantly to sun protection behaviours and correct knowledge of melanoma, NMSC and sun protection. The youngest doctors in this study were brought up on a background of skin cancer awareness. It is therefore concerning that they are the most likely to report being sunburnt and the least likely to wear hats or long sleeves.

It has been consistently demonstrated that mass media campaigns for primary prevention have been not only cost effective but also saved lives [6-8]. This study may represent the implications of decreased investment and highlight the need for further primary prevention.

This study had a relatively low response rate based on the number of surveys distributed. Despite this there was no statistically significant difference between this study and the Australian workforce statistics [9] regarding the proportion of women, specialists or different ages. The voluntary nature of this study creates the possibility for selection bias as those who completed the study may have personal interest or experience in skin cancer or public health campaigns. This may affect the generalisability of our results to Australian doctors.

In this study of NSW doctors, we demonstrated that sun protection behaviours varied significantly between age groups. There were significant gaps in knowledge regarding denaturing and adequate amounts of sunscreen. These findings are on a background of reduced investment in the primary prevention of skin cancers. Our study supports the need for further education of doctors and the general population in regards to skin cancer so as to reduce the burden on Australia and continue the declining trend of skin cancer mortality.

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	Patients No. (%)
Sex	
Male	296 (50.3)
Female	292 (49.7)
Age	
18-30	127 (21.6)
31-45	125 (21.3)
46-60	165 (28.1)
>60	171 (29.1)
Employment	
Junior Medical Officer (Intern/Resident)	97 (16.5)

Registrar	95 (16.2)
General Practitioner	140 (23.8)
Consultant Specialist	256 (43.5)
Skin type (Fitzpatrick Scale)	
I: Pale white, always burns if exposed to the sun, never tans	38 (6.5)
II: White, burns easily, tans minimally	251 (42.7)
III: Light brown skin, burns moderately, tans well	202 (34.4)
IV: Burns minimally, tans well, moderate brown skin	75 (12.8)
V: Dark brown skin, rarely burns, tans profusely	19 (3.2)
VI: Deeply pigmented dark brown to black skin, never burns	1 (0.2)

	Age				P – value
	18-30	31-45	46-60	>60	
Total no. (%)	127 (21.6)	125 (21.3)	165 (28.1)	171 (29.1)	
Activities When Burnt					
Holidays	68 (53.5)	34 (27.2)	27 (16.4)	16 (9.4)	<0.001
Sporting	50 (39.4)	26 (20.8)	32 (19.4)	17 (9.9)	<0.001
General Daily	27 (21.3)	14 (11.2)	14 (8.5)	8 (4.7)	<0.001
Previous skin cancer	3 (2.4)	6 (4.8)	41 (24.8)	82 (48.0)	<0.001
Perform self-examination	72 (56.7)	80 (64.0)	130 (78.8)	151 (88.3)	<0.001
Use of sun protection					
Sunscreen	119 (93.7)	120 (96.0)	159 (96.4)	147 (86.0)	0.001
Long sleeves	36 (28.3)	56 (44.8)	114 (69.1)	101 (59.1)	<0.001
Hat	73 (57.5)	108 (86.4)	155 (93.9)	157 (91.8)	<0.001
Sunglasses	114 (89.8)	118 (94.4)	136 (82.4)	136 (82.4)	<0.001
Avoidance	76 (59.8)	89 (71.2)	99 (60.0)	89 (52.0)	0.01

Variable(s)	Age				P – value
	18-30	31-45	46-60	>60	
Total No (%)	125 (22.2)	124 (22.0)	162 (28.7)	153 (27.1)	
Sunscreen Application					
Every day	18 (14.4)	38 (30.6)	39 (24.1)	18 (11.8)	<0.001
Only when outdoors	92 (73.6)	79 (63.7)	110 (67.9)	119 (77.8)	0.05

While sun bathing	68 (54.4)	25 (20.2)	27 (16.7)	26 (17.0)	<0.001
Check expiry date	28 (22.4)	54 (43.5)	82 (50.6)	62 (40.5)	<0.001
Buy new sunscreen every year	46 (36.8)	67 (54.0)	112 (69.1)	85 (55.6)	<0.001

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Author/s:

Dickison, P;Lee, A;McCormack, C;Smith, SD

Title:

Apathy in a sunburnt country: Understanding the skin cancer and sun protection knowledge and practises of Australian doctors.

Date:

2018-02

Citation:

Dickison, P., Lee, A., McCormack, C. & Smith, S. D. (2018). Apathy in a sunburnt country: Understanding the skin cancer and sun protection knowledge and practises of Australian doctors.. *Australas J Dermatol*, 59 (1), pp.71-73. <https://doi.org/10.1111/ajd.12636>.

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