

Practice of Skin Cancer Prevention among Young Malaysian

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Abstract

Objective: The objective of this study was to determine the practice of skin cancer prevention among young Malaysian.

Methodology: This cross-sectional study was conducted among 400 university students of Management and Science University (MSU). The questionnaire consists of socio-demographic characteristics such as (age, sex, race, education, residency, family income and family history on skin cancer) and practice toward skin cancer prevention. Data was recorded and analyzed using SPSS 13.

Results: A total number of 400 university students participated in this study. The majority of them were female and Malays (70.3%, 70.3%; respectively). Only 25% of the participants stayed in shade, 3.8% wore hat, 10.3% wore sunglasses, 43.3% wore clothes covering most of the body and 43.5% used sunscreen when outdoor. Gender significantly influenced the practice of staying in shade, clothes covering most of the body and sunscreen used ($p=0.009$, $p=0.001$, $p=0.001$; respectively). Race significantly influenced the practice of staying in shade and clothes covering most of the body ($p=0.004$, $p=0.002$; respectively). Age significantly influenced the practice of wearing hat and staying in shade ($p=0.011$, $p=0.013$; respectively). Type of educational significantly influenced the practice of staying in shade and clothes cover most of the body ($p=0.001$, $p=0.046$; respectively). Residency significantly influenced the practice of hat wearing and staying in shade ($p=0.006$, $p=0.002$; respectively). Income significantly influenced the practice of staying in shade, sunglasses wearing, clothes covering most of the body, sunscreen used ($p=0.002$, $p=0.048$, $p=0.014$, $p=0.049$; respectively). Marital status significantly influenced the practice of clothes covering most of the body and sunscreen used ($p=0.015$, $p=0.020$; respectively).

Conclusion: This study showed poor practice of skin cancer prevention among university students. Gender, marital status and income significantly influenced the practice of sunscreen use among the study participants. Health education about skin cancer prevention among university students is urgently needed.

Keywords: Skin cancer; Prevention; Malaysia

Introduction

Skin is the largest organ in human body, yet skin cancers are uncommon malignancies worldwide [1]. Recently there has been dramatic increase in the prevalence of skin cancer worldwide, and it accounts for 1 in 3 cancer cases worldwide [2,3].

Skin cancer is more common in people with light colored skin who spend a lot of time in the sun. It can occur anywhere on the body but is more likely to be found in places exposed regularly to sunlight such as the face, arms or hands. The most common warning sign and symptoms of skin cancer include changes in the size, color or shape of a mole, oozing or bleeding from a mole, a mole that feels itchy, hard, lumpy or swollen and a growth or a sore that will not heal [4].

It is well-established that extensive sun exposure during childhood or adolescence increases the probability of skin cancer in adulthood. In addition, 50–80% of the total amount of ultraviolet radiation (UVR) is accumulated during these periods; this may be due to the sensitivity of young skin to UV radiation [5-17]. Non melanoma skin cancer is now the most commonly diagnosed cancer in the United Kingdom accounting for a quarter of all new cancer cases [18,19]. It is a slow growing form of cancer and can be present many years before detection [2]. Malignant melanoma is a more serious form and rates have doubled in the UK in the last 20 years [20].

The predominant cause of skin cancer is exposure to solar radiation [21,22], in combination with the skin's susceptibility to the damaging effects of sunlight, including lighter complexion and predisposition to burn, blister, or freckle in the sun [21].

Sun exposure is regarded as a major environmental risk factor for cutaneous melanoma, basal cell carcinoma (BCC) and squamous

cell carcinoma (SCC) [23-26]. Cumulative sun damage is considered responsible for the development of SCC [23,26] while mixed effects of cumulative and intermittent sun damage seem to account for the development of BCC and melanoma [24-28].

Minimizing sun exposure, either through avoidance or skin protection measures, could greatly reduce the occurrence of skin cancer [8]. The centerpiece of skin cancer prevention efforts is to minimize the harmful effects of sun exposure during childhood and adolescence, as the majority of an individual's lifetime sun damage tends to occur before adulthood [24,25,29]. Preventative measures for skin cancer include staying out of the sun during the hottest part of the day (10 a.m-4 p. m), wearing sunscreen when exposed to sunlight and avoiding exposure to sunlamps and use of tanning salons. There has been a huge amount of research literature on skin cancer especially in the last 10–15 years. There is no doubt that this is indirect relation to the increases in prevalence of the disease on a worldwide basis. Australian and American research has led in the field and again it is probable that this has been due to the increase in rates of skin cancer in those countries.

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Overall, primary prevention of skin cancer is concerned with a reduction in the risk factors for skin cancer, most notably sun exposure and sunburn, through environmental changes, social changes and behavioral modification [30-35]. This includes such diverse activities as getting people to wear hats and long-sleeved clothes, stay in the shade, create shade by planting trees or constructing other canopies, reschedule work practices and sporting times, and other activities. In Malaysia, there are yet no studies measuring the practice of skin cancer prevention among university students [36]. Additionally, sun protection policies in universities in Malaysia are lacking. Therefore, the objective of this study was to determine the practice of skin cancer prevention among young Malaysian.

Methodology

This study was conducted among 400 university students at the Management and Science University (MSU), Shah Alam, Selangor during the academic year 2010/2011. The questionnaire was developed based on previous studies. The questionnaire consisted of two parts. The first part consisted of socio-demographic characteristics such as race, religion, marital status, educational background, residency, family monthly income, family history of cancer and family history of skin cancer. The second part was about practice towards skin cancer prevention. Questionnaires were distributed to all faculties at MSU namely, the International Medical School (IMS), the Faculty of Business and Management Professional (FBMP), Faculty of Health and Life Science (FHLS) and Faculty of Informative Science and Engineering (FISE). The questionnaires were distributed among students by simple random sampling techniques. Questionnaires were distributed at the university cafe, university plaza, Islamic center and library and lecture halls. The inclusion criteria were 18 year-old students and above, of Malaysian citizenship and can speak, read and understand English. Students less than 18 years' old and foreign students were excluded from this study. All participants were given explanation about the purpose of the study and an assurance of confidentiality. Participants were also assured that their participation in the study was voluntary and that they could withdraw at any time during the interview. The protocol of this study was approved by the ethics committee of the Management and Science University. Data obtained were analyzed using SPSS version 13. T-test and ANOVA test were conducted to determine if there was a significant difference between the study parameters. All tests were analyzed with the confidence interval, $\alpha=0.05$. The significance level (p value) was set at 0.05.

Results

A total number of 400 university students participated in this study. The majority of them were female, Malays, single and with medical background (70.3%, 70.3%, 99%, 59.8%; respectively). About 16.8% of the participants reported that they had family history of cancer and only 1.5% reported that they had family history of skin cancer (Table 1).

Regarding the practice of skin cancer prevention, only 25% of the participants stayed in shade, 3.8% wear hat, 10.3% wear sunglasses, 43.3% wear clothes covering most of the body and 43.5% used sunscreen when outdoor (Table 2).

For the factors that influenced the practice of skin cancer prevention, gender significantly influenced the practice of staying in shade, clothes covering most of the body and sunscreen used ($p=0.009$, $p=0.001$, $p=0.001$; respectively). Race significantly influenced the practice of staying in shade and clothes covering most of the body ($p=0.004$, $p=0.002$; respectively). Age significantly influenced the practice of

wearing hat and staying in shade ($p=0.011$, $p=0.013$; respectively). Type of education significantly influenced the practice of staying in shade and clothes cover most of the body ($p=0.001$, $p=0.046$; respectively). Residency significantly influenced the practice of hat wearing and staying in shade ($p=0.006$, $p=0.002$; respectively). Income significantly influenced the practice of staying in shade, sunglasses wearing, clothes covering most of the body and sunscreen used ($p=0.002$, $p=0.048$, $p=0.014$, $p=0.049$; respectively). Marital status significantly influenced the practice of clothes covering most of the body and sunscreen used ($p=0.015$, $p=0.020$; respectively) (Table 3).

Discussion

To our knowledge and after intensive literature search, this is the first study in Malaysia to determine the practice of skin cancer prevention among university students. Our findings can be used as baseline measures for current and future behavioral interventions for skin cancer prevention among university students. Gender, race, age, educational background, residency and income significantly influenced the practice of staying in shade or using umbrella.

In this study only 25% of this study's participants stayed in shade, 3.8% wore hat, 10.3% wore sunglasses and 43.3% wore clothes covering most of the body. Similarly, Saridi et al. [37] reported that only 50% of the participants using a hat and stayed in the shade, and the use of hat and sunglasses was low (39% and 25.5%, respectively). Similar findings were reported by other studies [38-41]. Gillani et al. [42] reported that less than 11.5% respondents reported that they always used sunglasses, sunscreen, protective clothes and cap against sun exposure. Another studies reported that most participants neither used sunscreens nor wore any protective clothes [43-45]. This means that university students

Variable	Categories	Number	Percentage (%)
Sex	Male	119	29.8
	Female	281	70.3
Race	Malay	281	70.3
	Chinese	21	5.3
	Indian	63	15.8
	Others	35	8.8
Marital status	Single	396	99.0
	Married	4	1.0
Educational background	Medical	239	59.8
	Non-medical	161	40.3
Resident	Rural	83	20.8
	Sub-urban	107	26.8
	Urban	210	52.5
Family income (RM)	≤5000	333	83.2
	>5000	67	16.8
Family history of cancer	Yes	67	16.8
	No	333	83.3
Family history of skin cancer	Yes	6	1.5
	No	394	98.5

Table 1: Socio-demographic characteristics of the study participants (n=400).

Variable	Categories	Number	Percentage (%)
Stay in shade	Yes	100	25
	No	300	75
Wear hat	Yes	15	3.8
	No	385	96.3
Wear sunglasses	Yes	41	10.3
	No	359	89.8
Wear clothes covering most of the body	Yes	173	43.3
	No	227	56.8
Use sunscreen	Yes	174	43.5
	No	226	56.5

Table 2: Practice of skin cancer preventions among the study participants (n=400).

	hat wearing	staying in shade or using umbrella	sunglasses wearing	clothes cover most of the body	sunscreen
Variable	p-value	p-value	p-value	p-value	p-value
Gender	0.081	0.009	0.862	0.001	0.001
Race	0.521	0.004	0.752	0.002	0.618
Age	0.011	0.013	0.570	0.350	0.759
Type of Educational	0.232	0.001	0.100	0.046	0.553
Residency	0.006	0.002	0.524	0.099	0.085
Income	0.090	0.002	0.048	0.014	0.049
Marital status	0.232	0.719	0.334	0.046	0.046
Family history of cancer	0.239	0.129	0.401	0.015	0.020
Family history of Skin cancer	0.195	0.566	0.822	0.606	0.409

Table 3: Factors influence the practice of skin cancer prevention.

did not take adequate sun-safety measures. Furthermore, the use of hats, shirts, shade and other sun protection aids was less common in most studies [43,46-52] except few studies [53-55]. Sun protection policy should be implemented such as compulsory hat use when outside especially during outdoor activities [48,56, 57]. Some barriers to sun protection reported by Hill et al. [58] where males felt hats were a problem in active games and pants and long-sleeve protective clothes make them too hot. Males predominantly rely on baseball caps which do not protect ears, sides of face, or neck. Additionally, hats are restricted in schools because they may represent gang insignias and can promote head lice transmission; thus, many children remain unprotected when outdoors during recess, physical education, and sports activities [59].

Several studies showed higher practice of skin cancer prevention than those found in our study. Miller et al. [60] showed that 58 and 49% of them wore a shirt and a hat respectively. A study by Rademaker et al. [61] in New Zealand showed that 65% of the participants reported sunscreen use, 69% the use of protective clothes and 43% the use of shade. A study by Dixon et al. [62] reported that almost all of the participants wore a hat when in the sun. This difference in fashion trends makes it easier for boys to cover-up during summer. The difference in the percentage of males and females wearing clothes covering most of their body may also reflect different fashion influences [63]. Livingston and other suggested that more work is needed to convince adolescents of the need to adopt sun smart behaviors. Future research is required to address how to shift fashion trends so that they can influence adolescent adoption of recommended sun smart behaviors, such as sun-protective clothes. Focusing on fashion that is acceptable to adolescents and which includes broad-brimmed hats, long pants, long-sleeved shirts, and bathers that provide greater cover over the body is crucial for potentially modifying behavior [63].

In this study, gender significantly influenced the practice of staying in shade, wearing clothes covering most of the body and sunscreen used. Race was also significantly influence the practice of staying in shade and clothes covering most of the body. Age significantly influenced the practice of wearing hat and staying in shade. Similar studies reported that the use of hats, protective clothes and seeking shade as measure of sun protection increased with adults' age [64,65]. Type of education significantly influenced the practice of staying in shade and wearing clothes covering most of the body. Inconsistent with our findings is a study that found the education system did not influence the sun protection practices among university students [42]. Residency significantly influenced the practice of hat wearing and staying in shade. Income significantly influenced the practice of staying in shade, sunglasses wearing, wearing clothes covering most of the body and sunscreen used. The cost of sunscreens, protective hats and clothes is a realistic concern [66,67]. Furthermore, the cost to design and execute intervention programs, create shade structures, and

provide educational materials on sun protection requires significant financial resources. Additional barriers involve sun protective apparel and sunscreen. Similar findings reported that the socio-demographic variables such as income and educational level are associated with higher levels of sun protection [66,67]. This highlights opportunities for younger adults, who are more likely to be active outdoors, to be targeted to improve their sun protective habits. A public health campaign about skin cancer prevention is an urgent need.

Experts recommend the use of sunscreen, as well as other sun-protective measures such as wearing protective clothes, wearing wide-brimmed hats, and avoiding the sun to protect persons from sun exposure [68]. Sunscreen use has been shown to be effective in preventing sunburn. Epidemiological studies suggested that sunscreen use can prevent squamous cell carcinoma and reduce the number of acquired nevi that are associated with sun exposure as a risk marker for melanoma [69,70]. However, sunscreen value in skin cancer prevention remains a controversial issue; randomized studies have suggested that sunscreen use could moderately reduce the risk of skin squamous cell carcinomas [69], and it could decrease the number of nevi in certain circumstances [70]. However, many epidemiological studies have suggested that sunscreen use during intentional sun exposure could increase the number of nevi, the risk of melanoma, and the risk of basal cell skin cancer [71-76]. Some randomized studies have also suggested that sunscreen use could increase the time spent in the sun, a phenomenon probably responsible for the increased risk of melanoma and basal cell cancer found in many observational studies [77,78].

The prevalence of sunscreen among the study population was 43.5%. In a Brazilian study, the prevalence of sunscreen use at the beach, work, and outdoor sports was 60.8%, 13.7% and 30.2; respectively [79]. In another study from Saudi Arabia showed that only 8.3% of the Saudi adult populations were using sunscreen regularly [80]. Wichstrom [81] reported that only 50% of all adolescents in their study re-applied sunscreen and only 25% used sunscreen with an adequate sun protection factor (SPF). Sunscreen was the most commonly used measure of sun protection in adults [46,81]. The period between 10 AM and 4 PM is regarded by several institutions as that of greatest risk for sun exposure and, therefore, sunscreen is indicated during this period [82]. Similar studies reported that most women used sunscreen as their favored sun protection method [83-85] and were more reluctant than men to use protective clothes or hats [46,53,83]. Our results on low prevalence of routine sunscreen among university students are consistent with previous studies [85,68,86]. Furthermore, only 50% of the participants reported using sunscreen with sufficient sun protection factor [37]. In a multicentre study in Belgium, Germany, France and Italy, only 25% of children always used sunscreen [87]. A study in Italy reported that 80% of children aged 6-14 years used sunscreen, but only 38% used it on a regular basis [88].

In this study, females use sunscreen more frequently than males. Similar findings were reported by several studies [89-93]. This is likely related to the fact that women generally have more healthy lifestyles than men, and show greater concern towards the ageing of skin.

In terms of sunscreen barriers, previous studies mentioned such barriers as forgetting to apply sunscreen, sunscreens are too messy, often apply them inadequately or infrequently, miss application to certain areas of the body and forget to reapply after swimming, sweating, and other activities during which sunscreens are degraded or washed off [81,85,94].

Study Limitation

There are several limitations to the current study. The study design was cross-sectional, which limits conclusions. Students self-report behavior may be an over estimation of actual behavior. However, as it is practically impossible to observe actual behavior over extended periods in all outdoor contexts, it is difficult to accurately determine whether this is so.

Conclusion

This study showed poor practice of skin cancer prevention among university students. Gender, marital status and income significantly influenced the practice of sunscreen use among the study participants. Health education about skin cancer prevention among university students is urgently needed.

Recommendation

Skin cancer needs to remain on the social agenda through a variety of mechanisms, and innovative new strategies are needed to increase the awareness about sun protective behavior. Health education needs to be implemented in universities, when students start making independent choices. Universities are ideal settings as they already have the infrastructure to help students acquire the necessary skills to establish healthy behaviors. A larger country-based study among university students is needed. This study suggests that campaigns that aim to promote sun protection among university students need to focus on informing them about strategies they may use to protect them against sun burn. Sun protection university policy, such as compulsory hat use when outside, is related to increased sun protection in university students, especially during outdoor activities.

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