

## RESEARCH ARTICLE

# Practice of Skin Cancer Prevention among Road Traffic Police Officers in Malaysia

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### Abstract

**Background:** The objective of this study was to determine the practice of skin cancer prevention among Malaysian road traffic police officers. **Materials and Methods:** This cross-sectional study involved 202 Malaysian Road Police Traffic officers. Inclusion criteria were those officers who work wearing white uniform regulating traffic. The survey took place at the Police Traffic Station, Jln Tun H.S. Lee, Kuala Lumpur, the main Head Quarters of Malaysian's Traffic Department where almost 600 police traffic officers are employed. The police traffic officers are given the task to take care of the traffic from the main office of the police station, then, according to the task, the officers drive to their given location for their duty. Each task is approved by the Chief Traffic Inspector of Kuala Lumpur. Data collected in this study were analyzed using SPSS 13, with the T-test for univariate analysis and multiple linear regression for multivariate analysis. **Results:** A total of 202 road traffic police officers participated. The majority were older than 30 years of age, male, Malay, married, with secondary education, with monthly income more than 2000 Ringgit Malaysia (66.3%, 91.1%, 86.6%, 84.7%, 96%, 66.3%; respectively). Regarding the practice of skin cancer prevention, 84.6% of the study participants were found to wear hats, 68.9% sunglasses and 85.6% clothing that covering most of the body but only 16.9% used a sunscreen when they were outdoors. When analysis of the factors that influenced the practice of skin cancer prevention was performed, univariate analysis revealed that gender, age and monthly income significantly influenced the practice of skin cancer prevention. For multivariate analysis, gender, monthly income and race significantly influenced the practice of using sunscreen among road traffic police officers ( $p < 0.001$ ,  $p = 0.019$ ,  $p = 0.027$ ; respectively). **Conclusions:** The practice of skin cancer prevention among the traffic police officers showed good practices in terms of wearing a hat, sun glasses and clothing that covers most of the body. However, the study revealed a poor practice of the use of sunscreen. The factors that influence the practice of sunscreen use were found to be gender, income, and race. The study suggests that more awareness campaign among traffic police officers is needed. Providing sunscreen for free for police traffic officers should be considered by the Police authorities.

**Keywords:** Skin cancer prevention - road traffic police officers - Malaysia - sunscreen

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### Introduction

Skin cancer is a public health problem worldwide that differentially affects residents of geographic regions where ultraviolet radiation has greater penetration (WHO, 2010). According to WHO report, annual incidence is about 2 to 3 million non-melanoma skin cancers and at least 132000 malignant melanomas occur worldwide (WHO, 2010). There has been a significant increase in the incidence of skin cancer throughout the world in the last few decades, despite increasing medical awareness of the dangers of skin cancer and the advancement of diagnostic procedures (Sendur, 2005).

Melanoma is the most deadly form of skin cancer, accounting for more than 70% of skin cancer deaths in the United States (American Cancer Society, 2008). The incidence of melanoma is increasing rapidly and faster than any other type of cancer (American Cancer

Society, 2008). Increases in skin cancer are due both to overexposure to naturally occurring UV and from use of sun beds as tanning devices (Wang et al., 2003). For instant, melanoma incidence increased from 1970 until 1997 a 2.5-fold in Finland (Parkin et al., 1992) and a 3.6-fold increase in US (Parkin et al., 1997). Studies have found that 65-90% of the cases of melanoma skin cancer are caused by UV rays and it has been shown that in the USA one in five people develop skin cancer at some point in their lives (Aynur et al., 2004; WHO, 2010; Ekici and Acar, 2010). From 1979 until 1998 a 2.4-fold increase was estimated in Scotland (MacKie et al., 2002) and from 1980 to 2000 a 2.8-fold increase was reported in France (Remontet et al., 2003).

Skin cancers are divided into two classes: non-melanoma skin cancer and melanoma (Fauci, 2008). Non-melanoma skin cancer includes basal cell carcinoma, which accounts for 70-80% of non-melanoma skin cancer,

squamous cell carcinoma accounting for 20% of non-melanoma skin cancer (Fauci, 2008). Melanoma is the most lethal form of skin cancer because of high metastatic potential and rapid often unpredictable spread to viscera in advanced disease (SkinCancerNet, 2012). Though only responsible for only 4% of skin cancers, it accounts for 75% of all skin cancer deaths (SkinCancerNet, 2012).

Regarding the skin cancer prevention, skin cancer is an almost entirely preventable disease (WHO, 2010). Primary prevention reduces the number of cases by avoiding risky exposures. These include minimizing sun exposure by changing sunbathing habits, avoiding artificial tanning devices, using sunscreen, seeking shade, wearing sunglasses, and wearing protective clothing (WHO, 2010). According to WHO, the most important messages for sun-protection are: limit time in the midday sun (11am to 4pm), seek shade, wear protective clothing, wear a hat, use sunscreen with SPF (sun protection factor) more than 15 and use sunglasses (WHO, 2010). Secondary prevention is based on early detection of skin cancer. Early detection involves regular skin examinations for high-risk individuals, screening programs to identify those at high risk for follow up, and educational programs (WHO, 2010). Early detection is essential for melanoma given its high metastatic potential (SkinCancerNet, 2012).

Sun-bed use is among the list of risky behavior for skin cancer, and huge number of studies was conducted to reveal people at risk for skin cancer development (Boldeman et al., 1997; 2001; Stott, 1999; Amiret al., 2000). The analysis done by Uslu et al. showed that sunburns and an abundance of moles are also considered as high risk factors (Uslu et al., 2006). Family history of melanoma is a known independent risk factor for melanoma (Rigel and Carucci, 2000). Several studies have found an association between sun-bed use, gender, and age. These studies evidence that the risk of skin cancer is high for women of age less than 30 (Boldeman et al., 1997; 2001; Stott, 1999; Amiret al., 2000). Road traffic police officers are the highest risk group for skin cancer due to the long period exposure to sunlight every day. Therefore the objective of this study is to determine the practice of skin cancer prevention among Malaysian road traffic police officers.

## Materials and Methods

The present study was approved by the ethics committee of the Management and Science University, Malaysia.

A cross-sectional study on practice of skin cancer prevention involved 202 Malaysian Road Police Traffic Officers from 1<sup>st</sup> of February until the 10<sup>th</sup> of February. Inclusion criteria those who were wearing white uniform and work regulating the traffic. The survey has taken place at Balai Polis Trafik, Jln Tun H.S.Lee, Kuala Lumpur, Malaysia. Police Traffic Station is the main Head Quarters of Malaysian's Traffic Department, whereby almost 600 police traffic officers are working. The police traffic officers are given the task or order to take care of the traffic from the main office of the police station, then, according to the task, the officers drive to their given

location to continue their duty. Each task or order is approved by the Chief Traffic Inspector, of Kuala Lumpur. The participants for the study were selected randomly from the Police Traffic Station; the goal of study and study objectives were explained and written informed consent was collected. The questionnaire consisted of two parts: 1) Socio-demographic characteristics such as (gender, age, race, marital status, educational level, monthly income, family history of cancer and family history of skin cancer) and 2) Another part of the questionnaire included questions about skin cancer prevention issues such as (staying in shade, wearing hat, wearing sunglasses, wearing clothing cover most of the body and wear sunscreen).

Data obtained in the study was analyzed using SPSS 13. T-test was used in univariate analysis and multiple linear regression was used in multivariate analysis.

## Results

A total number of 202 road traffic police officers participated in this study. The majority of them were older than 30 years old (66.3%), male (91.1%), Malay (86.6%), married (84.7%), with secondary education (96%), with monthly income more than 2000 Ringgit Malaysia (66.3%) (Table 1).

Regarding the practice of skin cancer prevention among road traffic police officers, 84.6% of the study participants were found to wear hats, 68.9% were found to wear sunglasses, 85.6% were found to wear clothing that

**Table 1. Socio-Demographic Characteristics of the Study Participants (n=202)**

| Variable                       | Categorized | No. | %    |
|--------------------------------|-------------|-----|------|
| Age                            | ≤30         | 67  | 33.2 |
|                                | >30         | 135 | 66.8 |
| Gender                         | Male        | 184 | 91.1 |
|                                | Female      | 18  | 8.9  |
| Race                           | Malay       | 175 | 86.6 |
|                                | Non-Malay   | 27  | 13.4 |
| Marital status                 | Single      | 31  | 15.3 |
|                                | Married     | 171 | 84.7 |
| Educational level              | Secondary   | 194 | 96   |
|                                | Tertiary    | 8   | 4    |
| Monthly income (RM)*           | ≤2000       | 68  | 33.7 |
|                                | >2000       | 134 | 66.3 |
| Family history of cancer       | Yes         | 7   | 3.5  |
|                                | No          | 195 | 96.5 |
| Past medical history of cancer | Yes         | 2   | 1    |
|                                | No          | 200 | 99.9 |

\*1USA=3Ringgit Malaysia

**Table 2. Practice of Skin Cancer Preventions among the Study Participants (n=202)**

| Variable                                 | Categorized | No. | %    |
|--|-------------|-----|------|
| Wear hat                                 | Yes         | 172 | 84.6 |
|  | No          | 31  | 15.4 |
| Wear sunglasses                          | Yes         | 139 | 68.9 |
|  | No          | 63  | 31.2 |
| Wear clothing covering most of your body | Yes         | 173 | 85.6 |
|  | No          | 29  | 14.3 |
| Sunscreen                                | Yes         | 34  | 16.9 |
|  | No          | 168 | 83.1 |

**Table 3. Factors influence the Practice of Skin Cancer Prevention among Road Traffic Police (n=202)**

| Variable                   | Hat wearing | Staying in shade or using umbrella | Sunglasses wearing | Clothes over most of the body | Sunscreen |
|----------------------------|-------------|------------------------------------|--------------------|-------------------------------|-----------|
|                            | p-value     | p-value                            | p-value            | p-value                       | p-value   |
| Gender                     | 0.015       | 0.074                              | 0.069              | 0.638                         | <0.001    |
| Age                        | 0.008       | 0.334                              | 0.899              | 0.113                         | 0.484     |
| Race                       | 0.064       | 0.077                              | 0.306              | 0.376                         | 0.229     |
| Marital status             |             |                                    |                    |                               |           |
|                            | 0.622       | 0.085                              | 0.832              | 0.424                         | 0.779     |
| Educational status         |             |                                    |                    |                               |           |
|                            | 0.103       | 0.590                              | 0.452              | 0.783                         | 0.762     |
| Monthly income             | 0.029       | 0.037                              | 0.393              | 0.093                         | 0.229     |
| Family history of cancer   |             |                                    |                    |                               |           |
|                            | 0.386       | 0.398                              | 0.502              | 0.091                         | 0.997     |
| Personal history of cancer |             |                                    |                    |                               |           |
|                            | 0.473       | 0.104                              | 0.432              | 0.304                         | 0.738     |

**Table 4. Predictive Model for Practice of using Sunscreen by Multiple Linear Regression**

| Predictive factors | b      | SE    | Beta  | p value |
|--------------------|--------|-------|-------|---------|
| Constant           | 4.82   |       |       |         |
| Gender             | -1.46  | 0.211 | 0.436 | <0.001  |
| Monthly income     | -0.305 | 0.129 | 0.151 | 0.019   |
| Race               | -0.399 | 0.179 | 0.142 | 0.027   |

cover the most of the body and only 16.9% used sunscreen when they were outdoor (Table 2).

Regarding to the factors that influenced the practice of skin cancer prevention, it was found that gender significantly influenced the practice of wearing hat and sunscreen used outdoor ( $p=0.015$ ,  $p<0.001$ ; respectively). Age was found to significantly influence the practice of skin cancer prevention among road traffic police officers ( $p=0.008$ ). Monthly income significantly influenced the practice of hat wearing, staying in shade and skin-self examination ( $p=0.029$ ,  $p=0.037$ ,  $p=0.039$ ; respectively) (Table 3).

According to the results of multivariate analysis, gender, monthly income and race significantly influenced the practice of using sunscreen among road traffic police officers ( $p<0.001$ ,  $p=0.019$ ,  $p=0.027$ ; respectively) (Table 4). R-square value was 0.223, indicating that 22.3% of the variation in applying sunscreen cream on the exposure areas when being outdoor can be explained by gender, monthly income and race. The p value from the ANOVA table was less than 0.001, which indicated that the model using stepwise method was significant. Using multiple linear regression, gender, monthly income and race were found to significantly influence the practice of using sunscreen cream among traffic police officers.

## Discussion

Two previous studies were conducted among university students in order to investigate skin cancer prevention in Malaysia (Al-Naggar et al., 2011; 2012). This is the first study that investigates skin cancer prevention among road traffic police officers in Malaysia. Road traffic police officers are at high risk due to long exposure to the sun everyday while they perform their duties. Therefore, the

findings of this study can be used as baseline measures for current and future behavioral interventions for skin cancer prevention among road traffic police officers in Malaysia.

It has been suggested that around 80% of skin cancer cases are preventable with the implementation of sun protection measures and appropriate behaviours. In spite of this, the incidence of skin cancer is still rising (Sendur, 2005). In this study 84.6% of road traffic police officers were found to wear hats, 68.9% wear sunglasses, 85.6% wear clothing covering the most of the body. Notably, lower percentages of sun protection measures were reported by Saridi et al. whose study revealed that only 50% of the participants were using hats and stayed in the shade; the use of hat and sunglasses indicated 39% and 25.5% of the study participants, respectively (Saridi, 2009). A number of studies reported that less than 11.5% of respondents indicated that they always use sunglasses, sunscreen, protective clothes and hat against sun exposure (Lowe et al., 2000; Livingston et al., 2001; Aquilina et al., 2004; Stankeviciute et al., 2004). Ergin et al. found that the most of the study participants generally avoided the harmful effects of the sun by staying in the shade (Ergin, 2011). Kaymak et al. (2007) and Haktar and Yazıcı (2008) found that 'not going out at peak times' is the most commonly adopted method of avoiding the harmful effects of the sun, with figures of 45.3% and 53.0% for men and women indicating this approach. The use of hats, shirts, shade and other sun protection aids were found to be less common in the most of studies (Stanton et al., 2000; O'Riordan et al., 2003). According to several researches (Fisher et al., 1996; Horsley et al., 2002), sun protection policy should be implemented including compulsory hat use when outside, especially during outdoor activities. Thompson et al. (1993) and Naylor et al. (1995) carried out clinical trials and found that sunscreens effective in reducing the incidence the precursors to squamous cell carcinoma. Another clinical trial showed that sunscreens are moderately effective in reducing squamous cell carcinoma (Green et al., 2000). In contrast to the above listed protective measures, some studies suggest that sunscreen, by itself, is not an adequate strategy for UV protection (Weinstock, 1999; Vainio and Bianchini, 2000). Many people use sunscreens if they intend to stay out in the sun for a long period of time, and they reduce the use of other forms of sun protection (e.g., clothing or hats) (Weinstock, 1999; Vainio and Bianchini, 2000). This might thereby lead to receiving the same or even a higher amount of UV exposure than it would have obtained during a shorter stay with no sunscreen (Weinstock, 1999; Vainio and Bianchini, 2000).

In our study only 16.9% of the participants used sunscreen while being outdoors. A study by Rademaker et al. (1996) performed in New Zealand showed that 65% of the participants reported sunscreen use, 69% the use of protective clothes and 43% the use of shade. Several studies showed lower practice of skin cancer prevention than those found in our study. Miller and Weinstock (1994) showed that 58% and 49% of the study participants wore shirts and hats, respectively. A study by Dixon et al. (1999) showed that almost all of the study participants wore hats when they were in the sun. Among African Americans, the

28% of the study participants were found to wear sun-protective clothing and 45% sought shade, while only 9% used sunscreen (Hall, 1999).

In our study, univariate analysis showed that gender, age and monthly income significantly influenced the practice of skin cancer prevention. According to multivariate analysis, gender, monthly income and race significantly influenced the practice of using sunscreen among road traffic police officers. Similarly, studies of other researchers found that the use of hats, protective clothes and seeking shade as measure of sun protection increased with age (Berwick et al., 1992; Pruim et al., 1999). 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 (Cody and Lee, 1990; Barankin et al., 2001). The socio-demographic variables such as income and educational level are associated with higher levels of sun protection (Cody and Lee, 1990; Barankin et al., 2001).

A number of studies indicated that protective behavior against skin cancer is different regarding gender and age (Ermertcan et al., 2005; Cinar et al., 2009). Several studies found that the younger generation is more insistent in taking protective behavior compared to the older generation while other studies show opposite results (Campbell, 1994; Kristjansson et al., 2004).

In conclusion, the practice of skin cancer prevention among the traffic police officers showed good practices in terms of wearing hat, sun glasses and cloths that cover most of the body. However, the study revealed a poor practice of the use of sunscreen. The factors that influence the practice of sunscreen use were found to be gender, income, and race. The study suggests that more awareness campaign among traffic police officers is needed. Providing sunscreen for free for police traffic officers should be considered by the Police authorities.

In recommendation, lectures and seminars on sun protection should be provided in the head quarter of the police station regularly. Obviously, the intervention programs and educational materials on sun protection require significant financial resources and this cost should be considered.

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