

Sun awareness and sun protection among persons attending dermatology clinics in Malta

Lawrence Scerri*, Stephanie Lateo*

ABSTRACT: On a global level, public awareness of the harmful effects of the sun on the skin, namely skin cancer and photoageing, has gradually increased largely as a result of ongoing public educational campaigns. In order to assess the current level of knowledge of sun-related skin damage, and to evaluate sun protection habits among Maltese persons (aged 16-50 years) attending dermatology clinics in 3 local hospitals, we undertook a questionnaire survey. A total of 333 valid completed questionnaires were available for evaluation. The vast majority of respondents were aware that exposure to the sun causes skin cancer (93%) and skin ageing (85%). In addition, 69% of the respondents knew that skin cancer can kill. Overall however, this high level of sun awareness is not being translated into safe practice. Occupational sun exposure is substantially greater in men. Notwithstanding this trend men use sunscreens far less than women when out in the sun both at work and during leisure. Pursuing outdoor leisure activities including going to the beach during hours of peak sunshine in spring and summer is popular. The general level of sun protection during leisure is unacceptably low. The media are considered to be by far the most influential source of information on the subject of the sun and the skin. The results of this survey can be used to guide future sun awareness campaigns to focus on issues and population subgroups that need most emphasis.

* Department of Dermatology, Sir Paul Boffa Hospital, Floriana, Malta

Correspondence: Dr. L. Scerri, Department of Dermatology, Sir Paul Boffa Hospital, Floriana, Malta.

Keywords: sun, awareness, protection, sunscreens, skin cancer

Introduction

Research has consistently documented that excessive unprotected sun exposure over time increases a person's risk of developing skin cancer, and induces photoageing¹. The ultraviolet (UV) component of solar radiation is the chief culprit responsible for these deleterious effects². Squamous cell carcinoma and to a greater extent, malignant melanoma of the skin can be fatal. The other sun-related and indeed the commonest type of skin cancer, basal cell carcinoma is not considered fatal but can produce significant morbidity and disfigurement. Clinical features that characterize photoageing of the skin include wrinkles, lentiginos (blemishes), telangiectasia, coarsening, solar elastosis and, keratoses³. There is increasing concern about the rising incidence of skin cancer particularly malignant melanoma, in several parts of the world. Another worrying phenomenon is the progressive depletion of the stratospheric UV-filtering ozone layer by man-made chlorofluorocarbons (CFC's)⁴.

Being in the temperate zone bordering on the subtropics, the Maltese Islands are subjected to a sunny climate. Suffice it to say that the mean number of hours of bright sunshine per day in the Maltese Islands ranges from a minimum of 5.03 hours in December to a maximum of 11.78 hours in July. In terms of number of days of bright sunshine per month the figures range from a minimum of 16.14 days in February to a maximum of 25.75 days in July⁵. There is, however, a price to pay. Cancer of the skin is the most common of all cancers in the Maltese Islands. What is most alarming, however, is the steady progressive rise in the local incidence of both

melanoma and non-melanoma skin cancer. The reported incidence of cutaneous malignant melanoma has more than doubled (125%) between 1993 and 1997 (12 cases or 3.75/100,000 in 1993 vs. 27 cases or 8.44/100,000 in 1997). Over the same period a 74% increase in the incidence of non-melanoma skin cancer was noted (159 cases or 49.69/100,000 in 1993 vs. 276 cases or 86.25/100,000 in 1997)⁶.

In the past decade there has been an ongoing public education campaign to promote sun awareness and sun protection in the Maltese Islands. The Health Promotion Unit of the Department of Health is directly responsible for coordinating public education on health matters. Despite the fact that the Maltese Islands are subjected to generous amounts of sunshine all year round, the sun awareness campaign, mainly through the media, has been largely confined to the summer months. We now present the results of a recent survey that we undertook in order to gauge the impact of the sun awareness campaign on persons attending dermatology clinics in Malta.

Methods

A questionnaire having a simple tick-off design with a choice of either Maltese or English language was employed. Subjects were recruited from clinic waiting rooms at Sir Paul Boffa Hospital, and two private hospitals, St. James' Hospital and Capua Palace Hospital between May and September 1998. Participation in the study was voluntary. Only Maltese citizens aged 16 to 50 years were eligible to participate.

The information requested was as follows:

- Demographic data.
- Highest level of education attained:
 1. Completed primary school
 2. Completed secondary school
 3. Underwent technical or vocational training, or obtained "A" levels
 4. University degree
- Skin type, complexion, and presence or absence of chronic skin disease
- Occupational sun exposure in Spring/Summer between 10.00 and 15.00 (hours of peak sunshine), and use of sunscreen and hat during this time
- Sun exposure during leisure activities (including going to the beach) in Spring/Summer between 10.00 and 15.00, and use of sunscreen and hat during this time
- Sun protection factor in the sunscreen normally used
- History of blistering sunburn
- Enforcement of sun protection (sunscreen and hat) by parents on children aged under 12 years
- General knowledge about the effects of the sun on the skin:
 1. Can the sun cause skin cancer? (Correct answer: yes)
 2. Can skin cancer kill? (Correct answer: yes)
 3. Does the sun cause skin ageing e.g. wrinkles and blemishes? (Correct answer: yes)

Additional question:
Is the sun healthy for the skin (i.e. getting tanned) as long as one avoids getting sunburnt? (Correct answer: no)
- Perceived influential sources of information about the sun and the skin

Results

A total of 333 valid completed questionnaires were available for evaluation. There was an even representation of the various age groups between 16 and 50 years. The sex distribution was 64.46% female, 34.64% male, and 0.90% unspecified. With regards to the level of education, 81% of the respondents had completed at least secondary level, and 35% attained education levels 3 or 4. Persons with the fairer skin types I and II constituted 45%, darker skin types III and IV added up to 52%, while 3% of the respondents were undecided about their skin type. There were 16% of the respondents that suffered from a potentially sun-responsive skin disease namely psoriasis, eczema and acne.

General knowledge about the sun and the skin

The three general knowledge questions intended to assess the level of awareness about the detrimental effects of the sun on the skin gave the following rates of correct answers: (1) 93%; (2) 69%; (3) 85%. In the case of the additional question, only 20% answered correctly (Table 1). Age, gender and the presence or absence of skin disease did not influence the level of sun awareness. However, the person's educational background clearly exerted a positive effect on the degree of sun awareness (figure 1).

Table 1 - Sun awareness questions score

	Yes	No	Do not know
Does sun cause skin cancer?	93%	1%	6%
Can skin cancer kill?	69%	8%	23%
Does sun cause skin aging?	85%	2%	13%
Is a tan healthy provided skin does not burn?	63%	20%	17%

Sun and work

Around a third of respondents (33%) were occupationally exposed to more than one hour of peak sunshine per day. Men received more sun exposure during work compared to women, in that 45% of males compared to 28% of females worked outdoors for more than one hour per day in peak sunshine. Moreover, 21% of males worked outdoors in peak sunshine for more than 3 hours per day, compared to 6% of females.

Table 2 - Occupational sun exposure according to sex

	Males	Females
Work more than 1 hour per day in peak sunshine	45%	28%
Work more than 3 hours per day in peak sunshine	21%	6%

Regular use of sunscreens among those who were occupationally exposed to more than 1 hour daily of peak sunshine was generally low, with a significantly lower rate in men, compared to women (figure 2). Persons belonging to the younger age group of 16-35 years made more regular use of sunscreens when at work in peak sunshine (28%), compared to those in the older age group of 36-50 years (11%). Regular use of a hat during work in peak sunshine was also low irrespective of gender (18%).

Fig 1 - Sun awareness questions score vs educational level

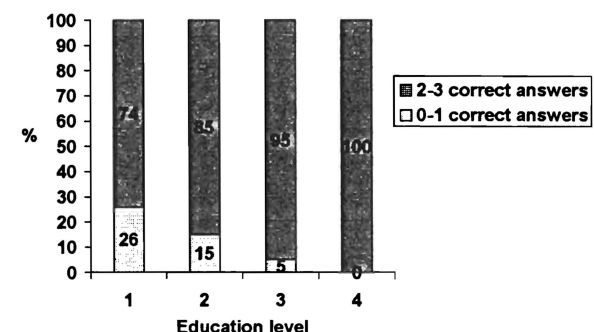
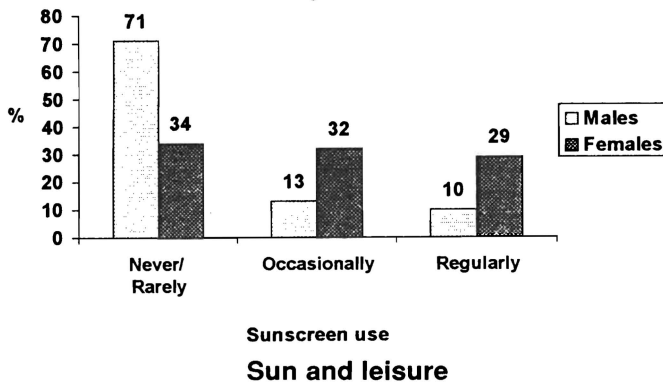


Fig 2 - Sunscreen use during work in peak sunshine according to sex



In response to the question on time spent in peak sunshine during outdoor leisure activities (including swimming, sport, walking, picnics and gardening), 60% replied that they do so at least once a week. However when asked specifically about going to the beach in peak sunshine there was a higher positive response rate (76%). The younger generation of 16-35 years was marginally more inclined to go to the beach in peak sunshine compared to the older generation of 36-50 years (82% versus 72%). A history of blistering sunburn was given by 38% of the respondents.

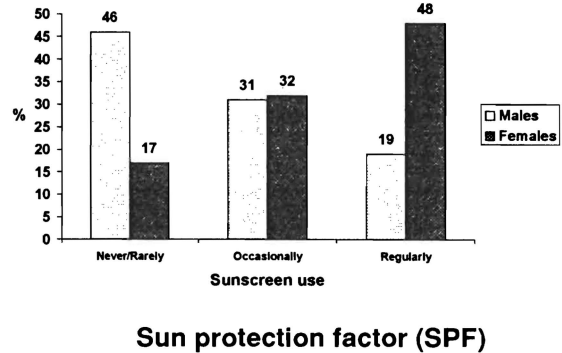
Only 39% of those who indulged in leisure activities (including going to the beach) in peak sunshine, made use of a sunscreens on a regular basis. Comparatively, women used sunscreens much more regularly than men during leisure (figure 3). There was a marginal variation in the regular use of sunscreens during leisure between the different age groups (42% for 16-35 years, 33% for 36-50 years). The tendency for using sunscreens regularly during leisure was marginally higher among more educated people (35% in people with secondary or lower level of education, 45% in people with post-secondary level of education). The regular use of a hat during leisure activities (including going to the beach) in peak sunshine was practised by 32% of the respondents, with no significant difference between the two sexes (24% males, 31% females).

Children and sun protection

One hundred and forty three parents of children under the age of 12 years completed the questionnaire. Just over half the parents enforced the regular use of a sunscreen and hat on their children when out in the sun during peak hours (55% for sunscreen, 53% for hat). Parents with a higher level of education were more consistent in enforcing regular use of a sunscreen on the part of their children (52% of parents with secondary or lower level of education, 64% of parents with post-secondary level of education).

The level of parents' knowledge about the detrimental effect of the sun on the skin was found to be directly proportional to the degree of enforcement of sunscreen use on the part of their children (figure 4). On the same lines, regular use of a hat when out in peak sunshine was noted in 27% of children of parents who scored 0-1 correct answers to the sun awareness questions, compared to 56% of children of parents who scored 2-3 correct answers.

Fig 3 - Sunscreen use during leisure activities in peak sunshine according to sex



When asked about the type of sunscreen normally used, 29% denied ever using a sunscreen. A sunscreen with SPF in the range 15-30 was most commonly used (30%), followed by SPF less than 15 (17%), and SPF greater than 30 (13%). Nineteen percent of fairer skinned persons employed sunscreens with sub-optimal SPF of less than 15.

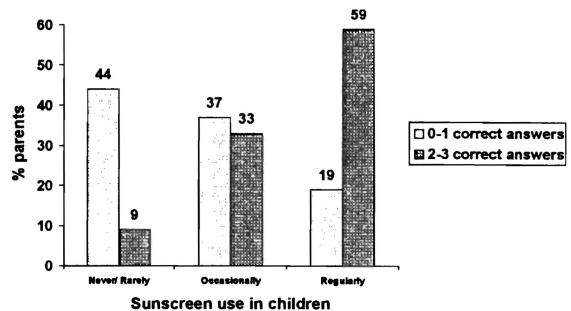
Skin type versus sun exposure/protection

Persons with fairer skin types I and II went to the beach in peak sunshine just as often as those with darker skin types III and IV (76% and 78% respectively). Fairer individuals made more regular use of a sunscreen and hat than darker individuals during work in peak sunshine (29% versus 14% for sunscreen; 26% versus 13% for use of hat). However, when it came to leisure, there was no significant variation in the regular use of sunscreen and hat between the fairer and darker skin types (33% versus 41% for sunscreen; 33% versus 32% for use of hat).

Influential sources of information about the effects of the sun on the skin

The mass media (TV, radio, newspapers and magazines) were perceived as the most influential source of information on health matters particularly related to the sun and the skin (75%). Other sources were rated on a much lower scale: doctor (25%), school (25%), family (19%) and others (15%).

Fig 4 - Sunscreen enforcement on children according to parents' sun awareness questions score



Discussion

Following the establishment of a link between the sun and skin cancer and skin ageing, educational campaigns were strategically launched worldwide in order to raise public sun awareness and to promote sun protection. In the eighties we had the "Slip Slap Slop" campaign, and this was followed in the early nineties by the "Sun Smart" programme¹. In order to assess the impact of these campaigns on the public, numerous surveys have been carried out and published. Most of them originated from parts of the world affected by a rising incidence of skin cancer namely Australasia, U.S.A., and Northern Europe. Most surveys showed that the overall level of sun awareness is good^{7,8,9,10,11}. However, a common negative finding that consistently emerged from most of the surveys to date is the striking gap between the level of sun awareness and the actual practice of sun protection, although this gap has gradually narrowed in certain countries such as Australia and the United States. Indeed, a tanned look is still generally considered desirable especially among adolescents and young adults^{9,10,11,12}. Strong predictive factors for the adoption of sun-protection measures in children include parents that practice adequate sun-protection themselves, and a history of sunburn in a child pertaining to the same family^{13,14}.

The most encouraging finding that comes out from our survey is the relatively high level of awareness about sun-induced skin damage among the respondents. However, although the vast majority of respondents are aware that skin cancer and skin ageing are largely a result of injudicious sun exposure, there is still the common mistaken belief that acquiring a suntan is harmless as long as one avoids getting sunburnt in the process. It comes as no surprise that the degree of sun awareness was found to be directly proportional to the person's educational background. Education enhances the capacity for capturing knowledge and information. However going by the results of our survey, the Maltese public in general has not yet progressed from theory to practice as far as sun protection is concerned.

In the occupational sphere, the use of sunscreens and head protection in spring and summer is generally poor. Furthermore, although men are occupationally more exposed to the sun they are less in the habit of using sunscreens.

The Maltese sunny climate encourages outdoor leisure activity. In contrast to work, one is expected to be more flexible in choosing the appropriate time for pursuing outdoor leisure activities. Despite this fact, the majority of the respondents in our survey admitted to pursuing outdoor leisure activities in peak sunshine during spring and summer. Moreover, persons with fairer skin types I and II who are more prone to sun-induced skin damage are going to the beach in peak sunshine as much as less susceptible persons with darker skin types III and IV. When it comes to the use of sunscreens during leisure, women again turn out to be significantly more diligent than men. Furthermore, the practice of wearing head protection during leisure activities in the sun is generally poor. Once more, the more susceptible fairer-skinned individuals are not adopting more sun protection measures than the darker-skinned counterparts who possess a greater degree of natural protection.

Children depend on guidance from their parents and school before they are able to fend for themselves. Our survey suggests that a fair proportion of Maltese parents of children under the age of 12 are enforcing sun protection measures on their children. Not surprisingly, this responsibility is fulfilled more by parents who possess a better knowledge of the adverse effects of the sun on the skin. Ongoing education for parents of young children is therefore indicated and should be included in the list of goals of future sun awareness campaigns. Only 25% of respondents recall being educated at school about the sun and the skin. This low figure, however, is a reflection of the past, dating back up to 35 years depending on the age of the respondents. The current level of sun awareness promotion in Maltese schools in general is not known, but could perhaps be the subject of a purposely designed survey in future.

People vary in their susceptibility to sunburn. According to current international recommendations those who burn easily (skin types I and II) are advised to choose a sunscreen with a high SPF of 15 or more. Darker subjects (skin types III and IV) can safely use sunscreens with a lower SPF of around 10¹⁵. Going by these recommendations it is evident from our survey that a sizeable proportion of fair-skinned respondents are using sunscreens with inappropriately low SPF.

Conclusion

Our survey is not strictly speaking a random sample of the Maltese population, but was conducted on a consecutive series of persons, both patients and non-patients, attending dermatology clinics. Although the data emerging from this survey cannot be directly extrapolated to refer to the Maltese public at large, they are still of interest and worth documenting. The high level of knowledge of the adverse effects of the sun on the skin among the respondents is encouraging. However, the practice of sun protection and sun avoidance is still very much lacking in spite of our sunny climate. Hence, further campaigning in this respect is mandatory, preferably on an all year round basis. Specific sub-groups of the Maltese population that warrant targeting include men, outdoor workers (and their employers who are legally bound to safeguard the employees' health and safety), parents of young children, persons with lower education, and school children. An increased use of sunscreens may be encouraged through a reduction in their retail price. This positive measure could possibly be accomplished by selling sunscreens as medicines rather than cosmetic items in order to gain exemption from value added tax (VAT). The chief protagonists in the sun awareness crusade, that is the Department of Dermatology and the Health Promotion Unit should continue to exploit the media's profound influence on public attitudes and habits.

Acknowledgements

The authors are greatly indebted to Dr. Alex Mifsud, Lecturer in Computer Science and Artificial Intelligence, University of Malta, for his invaluable contribution in processing the data. We wish to thank the directors of St. James' Hospital and Capua Palace Hospital for permitting recruitment of subjects from these private

hospitals. We thank Dr. Hugo Agius Muscat and Dr. Miriam Dalmas from the Health Information Unit for supplying the skin cancer statistics. We also appreciate the helping hand given by the medical students, Mr. Mark Anthony Aquilina and Mr. John Agius in the recruitment process.

References

1. Scerri L, Keefe M. The adverse effects of the sun on the skin - A review. *Maltese Med. J* 1995; VII(1): 26-31.
2. National Institutes of Health summary of the Consensus Development Conference on sunlight, ultraviolet radiation and the skin - Bethesda, Maryland, May 1989. *J Am Acad Dermatol* 1991; 24: 608-12.
3. Leyden JJ. Clinical features of ageing. *Br J Dermatol* 1990; 122(Suppl.35): 1-3.
4. Russel Jones R. Ozone depletion and its effects on human populations. *Br J Dermatol* 1992; 127(Suppl. 41): 2-6.
5. Maltese Meteorological Office Statistics.
6. Health Information Unit Statistics, Department of Health.
7. Bourke JF, Healsmith MF, Graham-Brown RA. Melanoma awareness and sun exposure in Leicester. *Br J Dermatol* 1995; 132(2): 251-6.
8. Robinson JK, Rigel DS, Amonette RA. Trends in sun exposure knowledge, attitudes, and behaviours: 1986 to 1996. *J Am Acad Dermatol* 1997; 37(2 pt.1): 179-86.
9. Robinson JK, Rademaker AW, Sylvester JA, Cook B. Summer sun exposure: knowledge, attitudes, and behaviour of Midwest adolescents. *Prev Med* 1997; 26(3): 364-72.
10. Lower T, Girgis A, Sanson-Fisher R. The prevalence and predictors of solar protection use among adolescents. *Prev Med* 1998; 27(3): 391-9.
11. Su L. Sun awareness at Mayo High School. *Cutis* 1997; 60(3): 155-7.
12. McGee R, Williams S. Adolescence and sun protection. *NZ Med J* 1992; 105(943): 401-3.
13. McGee R, Williams S, Glasgow H. Sunburn and sun protection among young children. *J Paediatr Child Health* 1997; 33(3): 234-7.
14. Maducdoc LR, Wagner RF, Wagner KD. Parents' use of sunscreen on beach-going children. The burnt child dreads the fire. *Arch Dermatol* 1992; 128(5): 628-9.
15. Ratnavel RC, Norris PG. Sunscreens and their medical uses. *Prescribers' Journal* 1993; 33(2): 63-71.

The copyright of this article belongs to the Editorial Board of the Malta Medical Journal. The Malta Medical Journal's rights in respect of this work are as defined by the Copyright Act (Chapter 415) of the Laws of Malta or as modified by any successive legislation.

Users may access this full-text article and can make use of the information contained in accordance with the Copyright Act provided that the author must be properly acknowledged. Further distribution or reproduction in any format is prohibited without the prior permission of the copyright holder.

This article has been reproduced with the authorization of the editor of the Malta Medical Journal (Ref. No 000001)