

SUNSCREENS - A LUXURY OR INEVITABILITY: AN AWARENESS STUDY

Saleeqath V¹, Narendra J. Shetty², Vinma H. Shetty³, Gurudutt S. Rao⁴, M. Ramesh Pai⁵, Shridhar Shetty⁶, Kiran Kumar P.K⁷, Narayana Bhat⁸

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ABSTRACT: Sun exposure and photo protection were an important element in evolution of humankind. Prolonged human exposure to solar UV radiation results in acute and chronic health effects on skin, eyes and immune system. Most of the conditions caused by UV radiation are preventable by encouraging use of sun protection methods. In India the people are unaware of the importance of use of sunscreen and proper method of sunscreen use. This cross sectional questionnaire based study done at a tertiary healthcare centre attached to a medical college in a coastal city of south Karnataka, India to find out the prevalence of use of sunscreen and evaluate the awareness about sunscreen in this part of the world. A total of 307 subjects participated in the study; Majority of them had skin type IV (68.1%). Half (49.8%) of the study population uses sunscreen as a method of photo protection, among them greater part (78.4%) used sunscreen to avoid skin darkening. Majority of sunscreen users were not aware of sunscreen, its exact use and method of applying. This study indicates a low prevalence of use of sunscreen and lack of awareness on the use of sun screening agents and its importance. This stresses on need for health education programmes among the public.

KEYWORDS: sunscreen, ultraviolet radiation, sun exposure.

INTRODUCTION: Sun exposure and photo protection were an important element in evolution of humankind. Some kind of photo protection always existed in humans. Many substances have been tried out as photo protection since historic times, which include olive oil, lead paints and chinks and in early 1900s zinc oxide, magnesium salts and bismuth were used. First widely used sunscreen was red veterinary petrolatum developed during World War II by Greene.¹ After which a number of sunscreens were synthesized, tested and marketed.

Prolonged human exposure to solar UV radiation results in acute and chronic health effects on skin, eyes and immune system. The UV spectrum is divided into UVC (200-290nm), UVB (290-320 nm) and UVA (320-400nm). UVA penetrates into skin as well as suppresses immune system and is implicated in sun tanning and premature aging of skin. UVB rays do not penetrate skin as UVA rays and is responsible for photo aging, photo carcinogenesis and also in cataract formation. UVC rays are almost totally absorbed by ozone layer.² Most of the conditions caused by ultraviolet radiation are preventable by encouraging consistent use of sun protection methods including using a broad spectrum water resistant sunscreen, staying in shady areas, minimizing time in the sun and wearing a wide brimmed hat, sunglasses, and protective clothing. Sun protective behaviour depends on individual decision making processes, it is important to understand people's attitudes toward, awareness and motivations for, sun protection. In India the people are unaware of the importance of use of sunscreen. And even though the use of sunscreen has increased in recent years the awareness

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on proper use of sunscreens are lacking. The objective of this study was to evaluate the awareness about sunscreen and to find out the prevalence of sunscreen use in this part of the world.

MATERIALS AND METHODS: The study was undertaken at a tertiary healthcare centre attached to a medical college in a coastal city of south Karnataka, India. It was a cross sectional study done during the summer months of May to June, 2013. For data collection, a pretested questionnaire was administered. Informed written consent was obtained from all subjects. All the students and staff in the medical college were invited to participate in the study. Participants were asked about history of sunburn, their sun protection behaviour, awareness on sunscreen and their use and any skin changes they have noticed because of sun exposure. The skin types of participants were determined by Fitzpatrick skin type chart.

RESULTS: A total of 307 subjects participated in the study, majority being females (71.7%) and single (90.6%). The mean age of participants was 21.83 years (age range, 18-36 years of age). The characteristic of the study population is depicted in table 1. Most of the participants were medical students (83.4%). Majority of them had skin type IV (68.1%). Weekly exposure to sun in almost half of them was less than 5 hours (50.8%) and only 20.8% gave a history of high sun exposure of more than 10 hours. Exposure to sun between 11am and 3 pm was reported by 93.5% of study sample. History of sunburn was given by 16.7% of the study population. Only few of them (1.95%) had a family history of skin cancer.

Half (49.8%) of the study population uses sunscreen as a method of photo protection, while many resort to other protective measures like umbrella or hats (26.7%), protective clothing (12.4%) or shade (9.1%). 10.4% of the study group were not anxious about sun protection and did not use any sort of shielding measures [Table 2; Figure 1].

Among the sunscreen users greater part (78.4%) used sunscreen to avoid skin darkening, no more than a small minority used it as a prophylaxis against photo aging (3.9%) or skin cancer (2.6%) [Table 3; Figure 2]. Out of those who were using sunscreens regularly, 41.8% applied it over all sun exposed areas [Table 4]. Almost all of them used sunscreen only once, primarily in the morning (94.8%) and none of them used it as frequently as every second hourly which is recommended. The amount of sunscreen used by majority of the study sample (85.6%) was reported as less than the recommended quantity of 2mg/cm². Only a small number of them (11.1%) were aware of the contents of the sunscreen which they were using. The preparation of sunscreen commonly used was cream (53.6%) with SPF 15-30 being more popularly chosen (47.7%). Non-users gave explanation for avoidance of sunscreen as inconvenience (33.8%), insignificance (39%) and cost factor (27.2%) [Table 5].

DISCUSSION: In a tropical country like India, where the ambient UV radiation levels in sunlight is greater than other areas and most of the human activities are sunlight oriented, sunscreen products are increasingly being used by the people particularly in urban areas.^{3,4} A study on prevalence of sunscreen use and awareness on sunscreen was indispensable as there was no study available from India as per literatures available.

In our study majority of sunscreen users were females which was similar to other studies on this subject.^{5,6,7,8} This could be because of the fact that females are more cosmetically conscious.

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Prevalence of use of sunscreen in our population was 49.8% which was high compared to study by Ahmad A⁵. In their study only 8.3% used sunscreen, which may be attributed to the educational status of our study sample. Our study population comprised of mainly skin type IV, and a few of them gave history of sunburn which was reported by them as redness and burning following sun exposure. This was contradictory to studies available.⁹ This may be explained by the increased rate of exposure to sun between 11am and 3pm.

Majority of sunscreen users reported the reason for use of sunscreen as prevention of hyper pigmentation of skin which was identical to that found in one study.⁵ Most of the study sample chose to buy the sunscreen product from cosmetic shops, only a small group bought as was recommended by doctors. These factors highlight the fact that people are not aware of exact reasons for use of sunscreen. Sunscreens should not only protect the skin from the sun, but also minimize the cumulative health hazards from sun damage caused over time.¹⁰ The major adverse effects of sun exposure in Asian skin include effects of photo damage in terms of pigmentation, wrinkling, and sunburn. The formation of freckles in the Asian population is encountered much less frequently. However, overexposure to sunlight can cause photo damaging effects, including skin cancers. In our study few among the study sample reported as having skin pigmentation and fine wrinkles because of sun exposure which was seen in both sunscreen users and non users. This may be because of high sun exposure between the peak hours and improper use of sunscreen in those who uses sunscreen.

The most important strategy for safeguarding skin from UV radiation is use of sunscreen to counteract the reactive oxygen species, by blocking UV radiation exposed on epidermis¹¹. Hence, more awareness should be provided on significance of sunscreen use and proper technique of use through various health education programs in the population. Childhood is an excellent time to form life-long prevention habits as attitudes and lifestyle patterns are being formed and are most malleable during this period¹² Schools will be the ideal setting to start with such health behaviours from where it will reach the community. Improvements in education will have a latency of many years for reducing adverse effects of sun like skin cancer but will be an excellent investment in the future cutaneous health of today's children.¹³

The SPF of sunscreen used by majority of our study sample was 15-30 which was similar to other studies.^{5,14} A minority of our study sample was not bothered about the SPF they were using. That again stresses on the fact that they doesn't recognize the importance of sunscreen and types of sun screening agents which should be used for adequate protection. The amount of sunscreen applied by majority of our study sample was less than what is advised, which if not used in adequate amount can reduce the efficacy of SPF of the sun screening agent used.¹⁰ The frequency of application of sunscreen by the study sample was inadequate as well, which was also analogous with other studies.^{5,14} This also points to the importance of appropriate awareness measures about use of sunscreen. This is again entrenched by the fact that only a very small percentage of our participants were aware of the contents of sunscreen they were using.

Reason for non use of sunscreen was reported as inconvenience and not being aware of importance of sunscreen by most which was comparable with study by Ahmad. The inconvenience of use was mainly because of the formulations used which were most of the time described as sticky or oily on application or as giving a whitish colour over the area applied. This is mainly because of the scarcity in availability of variety of new preparations or ignorance on availability of such preparations which overcomes these hassles. Many blamed cost of sunscreen preparations as a

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reason for not using them. This could be a factor for most of the general population avoiding use of such preparations. It reflects the situation in the society which includes people from low and middle socioeconomic strata who are more exposed to sun and its harmful effects. They find it expensive to use sunscreen on a routine basis. This must be taken into account by the authorities and should bring about measures to provide them at a low cost. So that sunscreen agents becomes accessible to all rather than being a luxury for few.

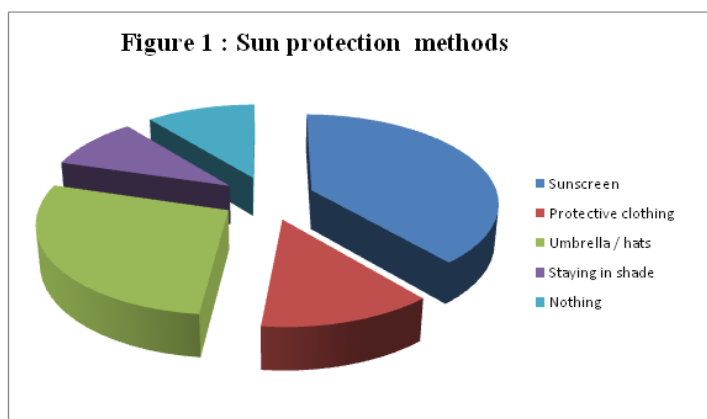
CONCLUSION: Our study indicates a low prevalence of use of sunscreen and lack of awareness on the use of sun screening agents in Indian population. They seem to be incognizant of the harmful effects of sun exposure. Thus proper health education programmes should be provided to all and everyone should be made conscious about importance of sun protection. We anticipate our study will prove helpful in improving the sun protective behaviour in India and other part of the world.

CHARACTERISTICS	N	PERCENTAGE
Sex		
Male :	87	28.3
Female :	220	71.7
Marital status		
Single :	278	90.6
Married :	29	9.4
Skin type		
III :	35	11.4
IV	209	68.1
V:	61	19.9
History of skin cancer in family:	6	1.95

Table 1: Characteristics of study sample

Method of sun protection	No: of samples	Percentage
Sunscreen :	114	37.1
Protective clothing :	38	12.4
Umbrella / hats :	82	26.7
Staying in shade :	28	9.1
Nothing :	32	10.4

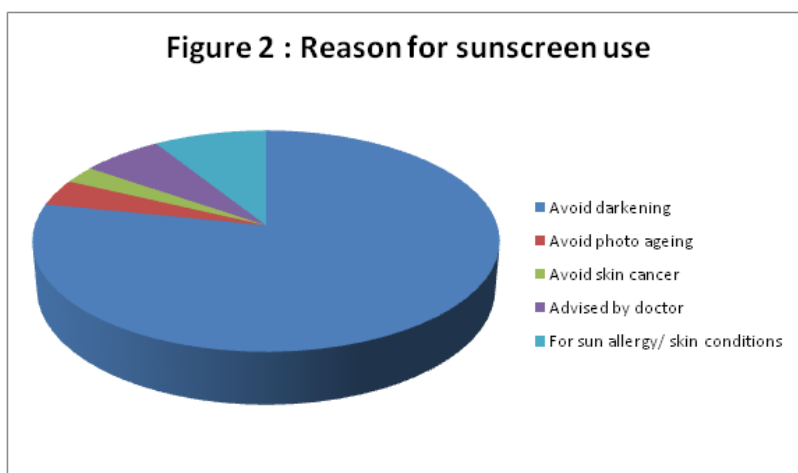
Table 2: Sun protection methods used by the study sample



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Reason	No: of samples	Percentage
Avoid darkening	122	39.7
Avoid photo ageing	6	2
Avoid skin cancer	4	1.3
Advised by doctor	10	3.3
For sun allergy/ skin conditions	14	4.6

Table 3: Reason for sunscreen use



	No: of samples	Percentage
Time of application :		
Morning	146	47.6
Evening	4	1.3
Both	4	1.3
Site of application :		
Face	62	20.2
Hands & face	28	9.1
All sun exposed areas	64	20.8
Amount of sunscreen used :		
Approximately 2 finger lengths	22	7.2
Amount they feel comfortable	126	41
>2 finger lengths	6	2
SPF of sunscreen used :		
<15	10	3.3
15-30	74	24.1
30-50	34	11.1
>50	8	2.6
Not aware	28	9.1

Table 4: Awareness among sunscreen users

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Reason	No: of samples	Percentage
Not convenient :	52	33.8
Expensive :	42	27.3
Don't feel important :	60	39.0

Table 5: Reason for non-use of sunscreen

REFERENCES:

1. Roelandts R. History of Photoprotection. In, Lim HW (ed). Clinical Guide to Sunscreens and Photoprotection. New York, Informa Healthcare, 2009;7.
2. Rai R, Srinivas CR. Photoprotection. Indian J Dermatol Venerol Leprol 2007;73:73-9.
3. Bachele D, Barnes PW, Brown D, Brown M. Photochem. Photobiol. 1991;54:411– 22.
4. Kumar S, Gupta RN. Safety and regulatory issues on sunscreen products in India. Arch Appl Sci Res 2013;5(2):145-53.
5. Al Robaee AA. Awareness to sun exposure and use of sunscreen by the general population. Bosn J Basic Med Sci 2010 Nov;10(4):314-8.
6. Abrams L, Jorgensen CM, Southwell BG, Geller AC, Emmons KM. Gender differences in young adults' beliefs about sunscreen use. Health Educ Behav 2003;30:29-43.
7. Rasmussen S, O'Connor RC. Factors influencing anticipated decisions about sunscreen use. J Health Psychol 2005.
8. Heckman CJ, Coups EJ. Correlates of sunscreen use among high school students: a cross-sectional survey. BMC Public Health 2011,11:679
9. Ravnbak MH. Objective determination of Fitzpatrick skin type. Dan Med Bull 2010; 57(8) B4152.
10. Latha MS, Martis J, Shobha V, Shinde RS, Banger S, Krishnankutty B et al. Sunscreening Agents. J Clin Aesthet Dermatol. 2013 Jan;6(1):16–26
11. Balakrishnan KP, Narayanaswamy N. Botanicals as sunscreens: Their role in the prevention of photoaging and skin cancer. Int J Cosmet Sci 2011;1(1):1-1.
12. Glanz K, Saraiya M, Wechsler H. Guidelines for school programs to prevent skin cancer. MMWR Recomm Rep 2002;51:1-18.
13. Karen M, Wesson MD, Nanette B, Silverberg M. Sun Protection Education in the United States: What We Know and What Needs To Be Taught. Sun Protection Education. Cutis 2003 Jan;71:71.
14. Al-Mutairi N, Issa BI, Nair V. photoprotection and vitamin D status: A study on awareness, knowledge and attitude towards sun protection in general population from Kuwait, and its relation with vitamin D levels. Indian J Dermatol Venerol Leprol 2012;78:342-9.

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AUTHORS:

1. Saleeqath V.
2. Narendra J. Shetty
3. Vinma H. Shetty
4. Gurudutt S. Rao
5. M. Ramesh Pai
6. Shridhar Shetty
7. Kiran Kumar P.K.
8. Narayana Bhat

PARTICULARS OF CONTRIBUTORS:

1. Postgraduate cum tutor, Department of Dermatology, A. J. Institute of Medical Sciences & Research Centre, Mangalore.
2. Professor & H.O.D., Department of Dermatology, A. J. Institute of Medical Sciences & Research Centre, Mangalore.
3. Associate Professor, Department of Dermatology, A. J. Institute of Medical Sciences & Research Centre, Mangalore.
4. Professor, Department of Anaesthesiology, A. J. Institute of Medical Sciences & Research Centre, Mangalore.

5. Professor, Department of General Medicine, A. J. Institute of Medical Sciences & Research Centre, Mangalore.
6. Professor, Department of Orthopaedics, A. J. Institute of Medical Sciences & Research Centre, Mangalore.
7. Professor & H.O.D., Department of Psychiatry, A. J. Institute of Medical Sciences & Research Centre, Mangalore.
8. Professor, Department of General Surgery, A. J. Institute of Medical Sciences & Research Centre, Mangalore.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Saleeqath V,
Post Graduate cum Tutor,
Department of Dermatology,
A. J. Institute of Medical Sciences & Research Centre,
Mangalore.
Email – saluv@hotmail.com

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