



Awareness of sun exposure and use of sunscreen by the general population of western Libya

Ebtesam A. Beshna¹ and Mabroukah Isharyhah².

1. Department of Pharmaceutics and Industrial Pharmacy, Faculty of Pharmacy, University of Zawia- Libya.

2. Department of Pharmacology and Toxicology, Faculty of Pharmacy, University of Zawia- Libya

Abstracts

Sun exposure has a pathogenic effect on the development of skin cancer, whose prevalence is increasing worldwide. Avoidance of sun exposure is considered to be an effective and safe tool for the prevention of skin cancer and photo aging. Sun exposure and photo protection-related behavior and knowledge are important aspects in the prevention of skin cancer and photodermatoses. The aim of the study is to evaluate the knowledge of Libya's western region regarding sun exposure and the risk of skin cancer, as well as to study their sun-protective attitudes and practices. Methods: A cross-sectional study was carried out between August and October 2022. A self-structured questionnaire with 100 samples was used for the interviews with the subjects, and 50 pharmacies were also recorded. The questionnaire consisted of four parts. The first part included social demographic data; the second part included different questions about sun exposure and sun protection behavior among study participants; the third part, using sunscreen among study participants; and the fourth part, specialty data from 50 pharmacies. The conclusion of this study indicated good knowledge about the hazards of sun exposure but indicated a low rate of sunscreen use by our population despite reasonable. This necessitates the need for health education programmes..

Key words: sun exposure, sunscreen, general population, and pharmacies.

Citation. . Beshna. Ebtesam , Awareness of sun exposure and use of sunscreen by the general population of western Libya

<https://doi.org/10.54361/ljmr.17-19>

Received: 22/01/23accepted: 16/02/23; published: 30/06/23Copyright ©Libyan Journal of Medical Research (LJMR) 2023. Open Access. Some rights reserved. This work is available under the CC BY license <https://creativecommons.org/licenses/by-nc-sa/3.0/ig>

Introduction:

The primary source of vitamin D is, without a doubt, exposure to sunlight. The ability of the human skin to produce significant amounts of vitamin D,(1). Vitamin D was first discovered in 1931, (2). The 1919 finding that sunlight might treat rickets was the first health benefit of sun exposure to

be supported by science, (2). Scientific investigation centered on the health concerns of sun exposure, particularly melanoma and other types of skin cancer, during the majority of the intervening years rather than looking at the advantages of sun exposure. In

1928, chemical sunscreens were created, (2).

The human skin has a surface area of roughly 1.5–2.0 m², making it the biggest organ in the body. Skin serves as a strong defense against the damaging effects of xenobiotic and environmental pollutants, (3). Chronic UV radiation exposure is a major contributor to the development of skin conditions like wrinkles, dermatitis, urticaria, ageing, hypo- and hyperpigmentation as well as the most difficult types of skin cancer, (3).

Sunscreens are the most preferred and dominant form of sun protection for a variety of social reasons, including their ease of use and greater level of protection, (3). Physical barriers to sunlight, such as sun protective clothing, sunglasses, hats, umbrellas, shade, and even possible avoidance of sunlight, can all be very common options for protection, (3). Numerous animals—like elephants, for instance—use mud as a physical barrier to deflect UV rays and prevent sunburns, (3,8). Sunglasses are the sole way to shield vulnerable eyes from the damaging effects of solar radiation. Their level of protection is typically assessed based on the amount of light that passes through a sunglass lens, or luminous transmittance, (3,4).

In order to avoid skin cancer, precautions should be made to protect the skin from both UVB and UVA radiation. UVA radiation can be considered to contribute to skin carcinogenesis by producing DNA damage to the skin, (5). Non-melanoma skin cancer (NMSC), which accounts for at least 40% of all new

cancer cases, is the most prevalent type of cancer in Canada, (6). Health Canada has approved and is in charge of sunscreen regulations in Canada. A National Consensus on Sun Safety Messages was created in 2016 to encourage consistency in public health messages across Canada. Additionally, over the past five years, both the FDA and Health Canada have changed their sunscreen monographs, (6). Despite the rarity of true sunscreen allergies, side effects from its use might include phototoxic and photoallergic reactions, as well as allergic and irritating contact dermatitis. Due to their increased use, sunscreens are now one of the primary causes of photoallergy, (7). The many preventative measures recommended include using sunscreens appropriately, avoiding UV exposure by looking for shade, remaining indoors during the hours of greatest UV radiation, (8).

Unfortunately, patient compliance with these recommendations has been disappointingly low, and a number of obstacles have been found, including a lack of information, false beliefs about the risks of skin cancer, difficulty starting behavioral changes, and socioeconomic factors like the time and costs involved, (8).

The aim of the study:

To evaluate the knowledge or awareness of Libya's western region regarding sun exposure and the risk of skin cancer, as well as to study their sun-protective attitudes and practices.

Materials and methodology:

The average citizens of western Libya were the subjects of the study. A cross-sectional study was carried out between August and October 2022. A self-structured questionnaire with 100 samples was used for the interviews with the subjects, and 50 pharmacies were also recorded. The consumers were informed of the study's goals and asked whether they would agree to participate. Enrollment was limited to those who gave their consent.

Data collection and analysis:

In this cross-sectional study only 100 samples was recorded. The questionnaire consisted of four parts. In order to receive a quicker response from the population, survey forms in Arabic were produced. The first part included social demographic data, such as gender, age, education status, occupation, family history of skin cancer, and skin type. The second part included different questions about sun exposure and sun protection behavior among study participants. The questionnaire asked about staying in the sun between 11 a.m. and 3 p.m., history of sunburns, knowledge of skin cancer, and sun protection behavior.

The third part, using sunscreen among study participants, includes using

sunscreen preparations or not, frequency of use; sun protection factor (SPF), time of application, site of application, reason for use (to avoid skin cancer and skin darkening), reasons for non-use (do not have; and not important).

The fourth part, specialty from 50 pharmacies, includes a percentage of sunscreen sales every day, whether the sale is with a prescription or not. The reason for a prescription is for the treatment of skin cancer, sun exposure, and other reasons. Most brands or types of sunscreen are for sale.

Results:

A total of 100 participants completed the questionnaire and were included in the final analysis. The participant characteristics of the population were that 72% were female and 28% were male, while the mean age was 20–40 years old. 83% of participants had an indoor, and 17% had an outdoor. On the other hand, 30% of participants lived in rural areas and 70% lived in urban areas. 34% of participants had skin type II, 64% had skin type III, and only 2% had skin type IV. Nevertheless, 100% lacked Family history of skin cancer, table 1.

Table 1. Personal and demographic characteristics of the study population

Characteristics	N (%)
Gender	
Female	72
Male	28
Age (years)	
≤ 20	57
≤ 30	43
Occupation	
Indoor	83
Outdoor	17

Social background	
Rural	30
Urban	70
Skin type	
II	34
III	64
IV	2
Family history of skin cancer	
Yes	0
No	100

Table 2 showed 58% of participants spent time between 11 a.m. and 3 p.m. 42% of participants did not spend time between 11 a.m. and 3 p.m. All the participants of the study had knowledge of skin cancer. 36% had information from health personnel,

32% from the internet, 29% from family and friends, and only 3% from books. Participants with sun protection behavior used 52% of head covers, 15% of glasses, and 52% of sunscreen (specialty for females).

Table 2. Sun exposure and sun protection behavior among study participants

Factors	N (%)
Do you spend time in the sun between 11 a.m. and 3 p.m.?	
Yes	58
No	42
History of sun burns	
Yes	33
No	67
Knowledge of skin cancer	100
Source of information	
Books	3
Internet	32
Health personnel	36
Family and friends	29
Sun protection behavior	
Wearing head cover	52
Wearing glasses	15
Using sunscreen	52 (Female)

52% of participants used sunscreen, with 71% always using it while 29% used it sometimes. 94% of participants used 50% SPF, and only 6% used 30% SPF. 87% of participants applied sunscreen in the morning, whereas 14% of participants used it in the afternoon, table 3.

Table 3 also showed 50 % of participants' application of sunscreen on the face, and 50% of participants' application of sunscreen on the face and hands. 52% of participants used sunscreen to avoid skin darkening and sunburn. Of those who did not use sunscreen, 35% of participants did not

have it, and 58% said it was not important.

Table 3. Use of sunscreen preparations among study participants

Characteristics	N (%)
Use sunscreen preparations	52
Frequency of use Always sometimes	37(71%) 15 (29%)
Sun Protection Factor (SPF) 30% 50%	3(6%) 49(94%)
Time of application Morning Afternoon	45(87%) 7(14%)
Site of application Face Face and hands	26(50%) 26(50%)
Reasons for use To avoid skin darkening To avoid sunburn	52 52
Reasons for non-use Do not have Not important	18(35%) 30(58%)

Table 4 showed that 44% of pharmacies participating (50%SPF) sell per day, 36% of pharmacies sell per day (30%SPF), and only 20% of pharmacies sell per day (70%SPF). 48% of

pharmacies sell without a prescription; 2% of pharmacies sell for treatment. Uriage and LaRoche were the most popular brands for all pharmacies.

Table 4. Knowledge of pharmacies that participate in selling sunscreen

Characteristics	N (%)
How much do you sell per day of sunscreen? 30% 50% 70%	18(36%) 22(44%) 10(20%)
Selling with prescription Treatment Selling without prescription	2 48
Most sunscreen brands for sale	Uriage and LaRoche

Discussion:

The prevalence of sunscreen use and the factors associated with sunscreen use among adults in urban and rural communities in the western region of Libya were studied. People are more likely to engage in outdoor recreational activities during the summer and autumn, which are the seasons with the highest UV index.

In this study, the majority of the participants were females (72%), followed by males (28%). 83% of participants had an indoor experience, and 17% had an outdoor experience. On the other hand, 30% of participants lived in rural areas and 70% lived in urban areas. 34% of participants had skin type II, 64% had skin type III, and only 2% had skin type IV. The sun exposure is different between rural and urban areas. In this study, only 30% of participants from rural areas and 2% of participants with skin type IV experienced a significant increase in the duration of their exposure to the sun. This also lacks a family history of skin cancer. According to another study, the findings are in line with the majority of studies that looked at the sociodemographics of sun exposure, (9).

This study showed that 58% of participants spent time between 11 a.m. and 3 p.m., 42% of participants did not spend time between 11 a.m. and 3 p.m.,

which is because people live in different areas, indoors and outdoors. All the participants in the study had good knowledge or awareness of skin cancer or the adverse effects of sun exposure, so they got information from health personnel at 36%, 32% from the internet, 29% from family and friends, and only 3% from books. That is similar to another study. Medical students are essential to the primary prevention of skin cancer since they will eventually become doctors. Their level of skin cancer knowledge, attitudes, and practises will influence patient care in the future and strategic choices made to reduce the burden of skin cancer, (10). Experience from other nations shows that public health initiatives can help a population's attitudes and actions related to sun protection. The key to reaching a big audience is to use television and printed media, especially newspapers. However, campaigns should also include alternative strategies like enlisting the help of healthcare professionals and using the internet to increase their effectiveness, (11).

Participants with sun protection behavior used 52% of head covers and 15% of glasses. The study showed that women were more likely than men to know about the hazards of sun exposure and were more likely to take protective measures, including head covers and glasses, but excluded the

only woman who used sunscreen (52%). Women were more likely than men to be aware of the risks associated with sun exposure and to take preventative measures, such as using sunscreen and wearing clothing, as well as to be more inclined to do so, (9).

71% of participants always using sunscreen while 29% used it sometimes. 94% of participants used 50% SPF, and only 6% used 30% SPF. 87% of participants applied sunscreen in the morning, whereas 14% of participants used it in the afternoon. Another study's finding is that it's critical to read the sunscreen product's instructions because not all sunscreens are broad spectrum. Depending on the SPF value and the minimal erythema dose (MED) for the user, a sunscreen can offer an interval of protection against solar UV radiation, (12).

50 % of participants' application of sunscreen on the face, and 50% of participants' application of sunscreen on the face and hands. 52% of participants used sunscreen to avoid skin darkening and sunburn. Another study found SPF and the quantity of sunscreen applications are strongly correlated with exposure time to the sun. Furthermore, despite the fact that sunscreen is meant to prevent sunburn, it has been discovered that sunburns occur more frequently on days when sunscreen is used, (13).

35% of participants who did not use sunscreen did so because they did not

have it, and 58% said it was not important. Similar to another study, it was probably due to the fact that women often lead healthier lifestyles than males and are more concerned about the ageing of their skin, (9).

Our study had a good knowledge according use sunscreen with good protection, that 44% of pharmacies participating (50%SPF) sell per day, 36% of pharmacies sell per day (30%SPF), and only 20% of pharmacies sell per day (70%SPF). 48% of pharmacies sell without a prescription; 2% of pharmacies sell for treatment. SPF is a metric used to quantify the level of UV protection against erythema and sunburn. SPF 50 was the most often used sunscreen, (14). Many sunscreen trade names are available in the Libyan market. Uriage and LaRoche were the most popular brands for all pharmacies in this study. The reason for choosing this type rather than others is that manufacturing propaganda, retailer's advice, and media could be part of the reasons. Information about public health and culture could inspire applying sunscreen, (14).

Conclusion:

This study indicated good knowledge about the hazards of sun exposure but indicated a low rate of sunscreen use by our population despite reasonable. This necessitates the need for health education programmes.

References:

1. H. Glerup, Mikkelsen, L.Poulsen, E.Hass, S.Overbeck, J.Thomsen,P.Charlesand E. F. Eriksen. Commonly

- recommended daily intake of vitamin D is not sufficient if sunlight exposure is limited. 2000. *Journal of Internal Medicine*; 247: (260-268).
2. David G. Hoel, Marianne Berwick, Frank R. de Grujil, and Michael F. Holick. The risks and benefits of sun exposure 2016. 2016. *Dermato-endocrinology*. 0: (1-17).
 3. Mukund Manikrao Donglikar, and Sharada Laxman Deore. Sunscreens: A review. 2016; *Pharmacogn. J.* 8: (171-179).
 4. Megan Sander MD, Michael Sander DMD, Toni Burbidge MD, and Jennifer Beecker MD. The efficacy and safety of sunscreen use for the prevention of skin cancer. 2020. *CMAJ*. 192: (1802-1808).
 5. Ammar Ihsan Awadh, Shazia Jamshed, Ramadan M. Elkalmi, Hazrina Hadi. The use of sunscreen products among final year medicine and pharmacy students: A cross-sectional study of knowledge, attitude, practice, and perception. 2012. *Journal of Research in Pharmacy Practice*; 5: (193-199).
 6. Heidi Li, Sophia Colantonio, Andrea Dawson, Xing Lin, and Jennifer Beecker. Sunscreen Application, Safety, and Sun Protection: The Evidence. 2016. *Journal of Cutaneous Medicine and Surgery*; 0: (1-12).
 7. Jane R Hanrahan. 2012. *Aust Prescr*; 35: (148–151).
 8. Mrinal Gupta. Assessment of knowledge, attitudes and practices about sun exposure and sunscreen usage in outpatients attending a dermatology clinic in North India. 2018. *Journal of Pakistan Association of Dermatologists*; 28: (521-525).
 9. Ahmad A. Al Robaee. Awareness to sun exposure and use of sunscreen by the general population. 2010. *Bosnian journal of basic medical sciences*; 10: (314-318).
 10. V.K. Nahar, MD, PhD, MS, A.H. Wilkerson, PhD, G. Ghafari, MPH, Martin, BS, W.H. Black, MD, J.F. Boyas, PhD, M. Savoy, PhD, G. Bawa, MS. Skin cancer knowledge, attitudes, beliefs, and prevention practices among medical students: A systematic search and literature review. 2018. *International Journal of Women's Dermatology*; 4 : (139–149).
 11. Mrinal Gupta. Skin cancer: Etiology and management. 2016. *Pakistan Journal of Pharmaceutical Sciences*; 29: (.999-10030).
 12. Triana Novitasari, Subur Prajitno, Diah Mira Indramaya. Behavior of Sunscreen Usage Among Medical Students. 2020. – *Periodical of Dermatology and Venereology*; 32: (174-181).

13. Bibi Petersen and Hans Christian Wulf. Application of sunscreen – theory and reality. 2014. *Photodermatol Photoimmunol Photomed*; 30: (96–101).
14. Nagib A. Elmarzugi, Eseldin I. Keleb, Aref T. Mohamed, Amel M. Hamza, Yosef S. Issa, Ahmad A. Layla, Mohamed Salama. Sunscreen behaviors among libyan society survey. 2014. *World journal of pharmacy and pharmaceutical sciences*; 3: (339-351).