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KNOWLEDGE, ATTITUDE AND PRACTICE OF SUNSCREEN USE AMONG STUDENTS OF UNIVERSITY OF KERBALA

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ABSTRACT

Background: Ultraviolet (UVR) radiation is considered the most harmful external factor threatening the skin. With the advent of global warming and the consequent rise in prolonged sunny weather worldwide, the need for effective photoprotection and regular sunscreen use has become critical. Sunscreen is a product designed to protect the skin from harmful radiation emitted by the sun. Iraq has been considered as one of the most vulnerable countries in the World to climate change. However, very few studies have been conducted in Iraq regarding sunscreen use. **Aim of Study:** -assessment of Kerbala University students' knowledge, attitudes, and their actual daily practices regarding sunscreen use. **Subjects and Methods:** A cross-sectional study was conducted from the 1st of April to the end of May 2024 among 480 students at Kerbala University; data was collected through a self-administrated questionnaire translated into Arabic; it consisted of 32 questions covering the knowledge of the participants about sunscreen, attitudes towards sunscreen use, and their practices in daily life. Data was analyzed through SPSS program version 24 and a statistically significant level was determined at P <0.05. **Results:** The present study included 419 university undergraduate students from four colleges (Pharmacy, Nursing, Education for Humanities, and Engineering) of Kerbala University. Most of them were female (63.7%). The overall knowledge was 57%, Knowledge was lacking in specific areas, and with only 17% aware that sunscreen can be used for children aged six months and above and just 32% recognizing the meaning of broad-spectrum sunscreen. More than half of the students reported regular use of sunscreen, 66% of participants use sunscreen on sunny & cloudy days, only 23% practice reapplying sunscreen during the day. Inconvenience, lack of time, and forgetting to use were the main reasons for not using sunscreen. Social media was the main source that promoted the participant's sunscreen use. Gender (female), good monthly income, and history of dermatological disease were found to be significantly associated with higher knowledge and use of sunscreen. **Conclusion:** Students' knowledge about sunscreen use was moderate, Critical gaps in both knowledge and practice was demonstrated among students. Inconsistent sunscreen use was identified. Targeted educational programs are needed to bridge these gaps and enhance awareness about sunscreen use.

KEYWORDS: sunscreen, UV light, karbalaa, Iraq.

INTRODUCTION

The advent of global warming and the consequent rise in prolonged sunny weather worldwide underscore the heightened significance of photo protection and consistent sunscreen application.[1] Ultraviolet (UVR) radiation is considered the most harmful external factor threatening the skin[2] The acute effects on skin include erythema (sunburn), pigmentation (tanning), suppression of acquired immunity, and enhancement of innate immunity. Chronic effects include photoaging and photocarcinogenesis.[3] To prevent the consequences of excessive sun exposure, it is advisable to promote the regular use of photoprotective measures from an early age, as 80% of the radiation accumulated over one's lifetime occurs during childhood and adolescence.[4]

The American Academy of Dermatology (AAD) recommends wearing long-sleeved clothes, wide-brimmed hat, Sunglasses with UV protection, and applying a broad-spectrum, water-resistant sunscreen with a sun protection factor (SPF)30 or higher.[5] Today, major health organizations, including the Centers for Disease Control and Prevention(CDC), World Health Organization(WHO), American Cancer Society,

American Academy of Dermatology (AAD), and Skin Cancer Foundation, advocate sunscreen as a vital aspect of a successful photoprotection strategy.[6]

Iraq has been recognized as one of the most vulnerable countries in the Arab area to climate change. In recent years, the country has experienced increasing summer heat waves.[7] One study predicts that temperatures in the Middle East will rise by 1.4°C to 4°C by the end of 2100.[8] This geographic factor made the need for effective sun protection even more critical. However, very few studies have been conducted in Iraq regarding sunscreen use. The aim of this study is assessment of Karbala University students' knowledge, attitudes, and daily practices regarding sunscreen use, association of sunscreen use with sociodemographic factors, and identification of the factors that influence students' decision to use sunscreen.

METHOD

A Cross-sectional study was conducted from the 1st of April until the end of May 2024 among students of the University of Kerbala in Iraq. Sample selection was done in stages**:** 4 colleges were randomly selected from a total of 17. The selected colleges included Pharmacy, Engineering, Nursing, and Education for Humanities. A convenient sample size of 419 students, both males and females, was included in the research.

A validated questionnaire from a previously published study[9] the questionnaire was assessed by two dermatologists for content validity.

The final version of the questionnaire included questions about participant age, sex, work, college, residence, marital status, family income, history of dermatological diseases, history of sunburn, family history of skin cancer, and skin type. nine questions about sunscreen participant knowledge; and ten questions about sunscreen practices, reasons for not using sunscreen, and other ways of sun protection; the final section included two questions about their attitude. The study protocol was approved by the Council of Arabic Board of Family Medicine/ Baghdad. Agreement of Kerbala University was obtained before data collection. Verbal consent of all participants was obtained.

The data were analyzed by using the Statistical Package for the Social sciences (SPSS 24.0 for Windows). The descriptive statistics were used in term of frequency and percentage and mean ±SD in appropriate tables and graphs. Abnormal distributions were determined throughout the use of Kolmogorov–Smirnov test. Possible association for abnormally distributed variables was determined through the use of the Mann-Whitney test to compare the means between two groups, or Kruskal-Walli's test to compare the means among three or more groups. Possible association between two categorical variables was made through the Chi-square test. Significance level was considered when $p < 0.05$.

RESULTS

The present study included 419 college students from four colleges (Pharmacy, Nursing, Education for Humanities and Engineering) of Kerbala University. Males represented more than one third of the study participants. More than one half of the study participants (53.7%) reported good monthly income. History of sunburn reported by less than one third of the study participants (28.2%). Regarding skin type, according to the Fitzpatrick scale, 258 (61.6%) of the study participants reported that they had Type III (burn moderately), as described in Table 1, Figure 2, and Figure 3 below.

Table 1: Socio-demographic characteristics of the study participants.

Characteristics	Categories	Frequency	%
Age (years)	20	184	43.9
	21	184	43.9
	22 and more	51	12.2
	Total	419	100
	Mean ±SD	20.73±0.84	
Sex	Male	152	36.3
	Female	267	63.7
	Total	419	100
work	Yes	45	10.7
	No	374	89.3
	Total	419	100
Residence	Rural	91	21.7
	Urban	328	78.3
	Total	419	100
Marital status	Single	392	93.6
	Married	27	6.4
	Total	419	100
Monthly income	Good	225	53.7
	Average	182	43.4
	Weak	12	2.9
	Total	419	100
History of sunburn	Yes	118	28.2
	No	301	71.8
	Total	419	100
History of dermatological disease	Yes	52	12.4
	No	367	87.6
	Total	419	100
Dermatological disease	Melasma	11	2.6
	rosacea	5	1.2
	photosensitivity	2	0.5
	others	34	8.1
	Subtotal	52	12.4
Family history of skin cancer	Yes	1	.2
	No	418	99.8
	Total	419	100

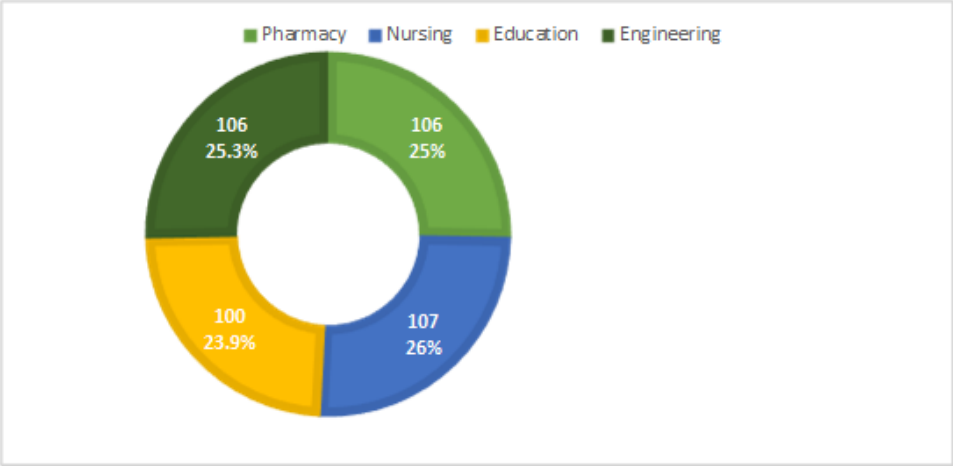
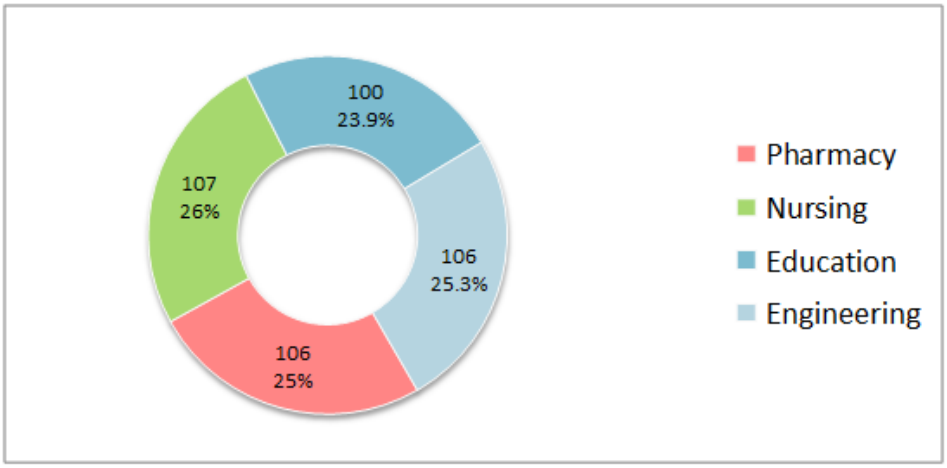


Figure 2: Proportions of Study Participants Of The Four Colleges.



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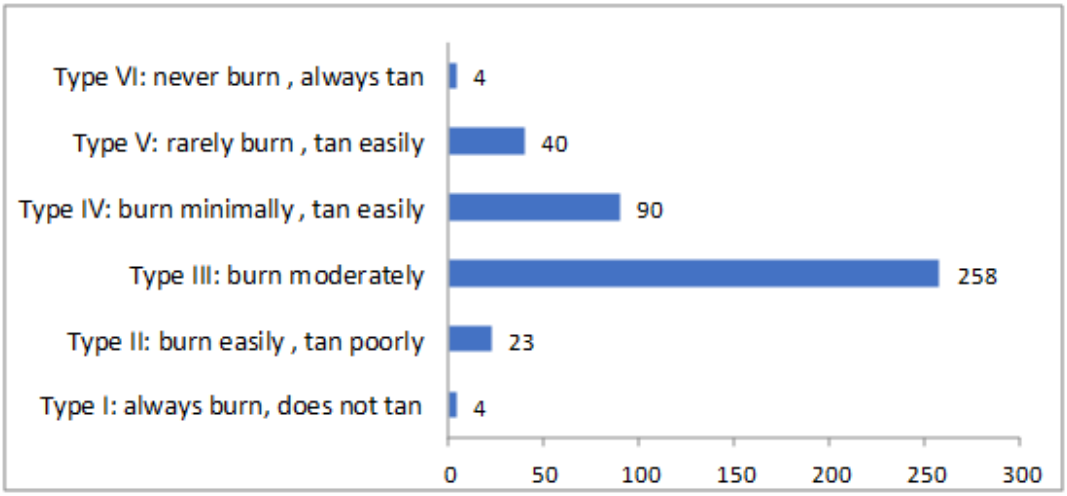

Figure 3: Proportions of skin type among study participants (Fitzpatrick scale)[10]

In regard to the knowledge questions about sunscreen on the questionnaire form, 88% of the study participants responded correctly to the question " Sunscreen prevents sunburn" and 81% to the question " Sunscreen protects from UV damage'. Whereas 17% of the study participants responded correctly to the question "Sunscreen can be used for children aged 6 months and above," and 30% of the study participants responded correctly to the question "It is recommended to use sunscreen with SPF>30. The overall knowledge score and percent were 0.57 and 57%, respectively, as shown in Table 2 below.

Table 2: Knowledge questions and their answers of the study participants.

Question no.	Questions	True answer	False answer	Do not know	Mean Knowledge score	Knowledge percent
1.a	Sunscreen protects from UV damage (true)	339 (80.9)	15 (3.6)	65 (15.5)	0.81	81%
1.b	Sunscreen prevents sunburn (true)	367 (87.6)	10 (2.4)	42 (10)	0.88	88%
1.c	Sunscreen prevents skin cancer (true)	232 (55.4)	32 (7.6)	155 (37)	0.55	55%
1.d	Sunscreen prevents pigmentation and premature aging (true)	306 (73)	18 (4.3)	95 (22.7)	0.73	73%
2	It is recommended to use sunscreen in (all seasons)	286 (68.3)	133 (31.7)	0	0.68	68%
3	What is the most dangerous time for exposure to sunlight (10 a.m. – 2 p.m.)	213 (50.8)	194 (46.3)	12 (2.9)	0.51	51%
4	It is recommended to use sunscreen with (SPF≥30)	127 (30.2)	146 (34.8)	146 (34.8)	0.30	30%
5	It is recommended for pregnant women to use sunscreen (true)	190 (45.3)	10 (2.4)	219 (52.3)	0.45	45%
6	What is meant by broad spectrum sunscreen that prevents sun damage (protect from UVA, UVB, blue light)	134 (32)	19 (4.5)	266 (63.5)	0.32	32%
7	Sunscreen can be used for children aged six months and above (true)	73 (17.4)	99 (23.6)	247 (58.9)	0.17	17%
8	It is recommended to use water-resistant sunscreen during swimming (true)	266 (63.5)	39 (9.3)	114 (27.2)	0.63	63%
9	It is recommended to use sunscreen (15 minutes before exposure to the sun)	320 (76.4)	69 (16.5)	30 (7.2)	0.76	76%
Overall knowledge score and percent					0.57	57%

Regarding the use of sunscreen, results of the present study revealed that more than half of the study participants reported regular use of sunscreen, whereas 143(34.1%) of the study participants reported that they rarely or never use the sunscreen as showed in figure 4 below.

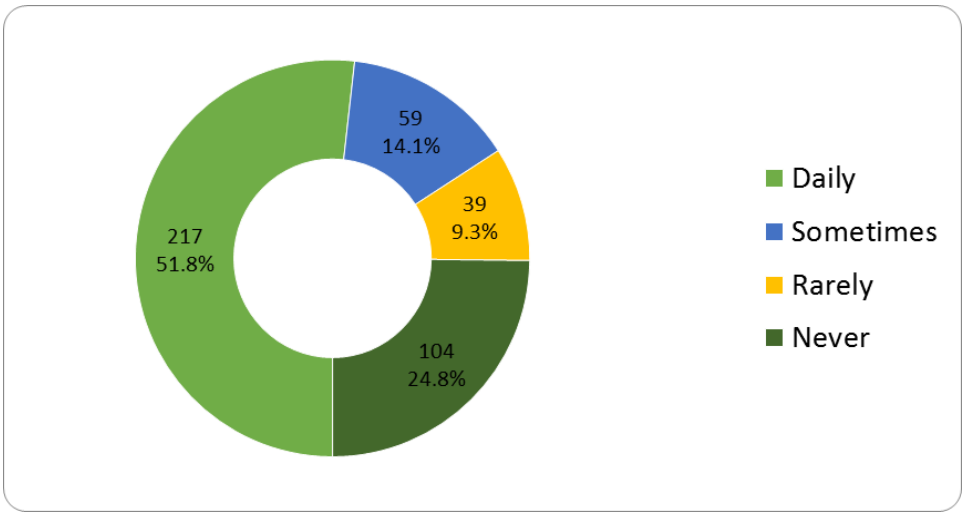

Figure 4: Use of sunscreen among study participants.

Being not convinced, don't have time and forget to use were the main three reasons for not using the sunscreen as showed in figure 5 below.

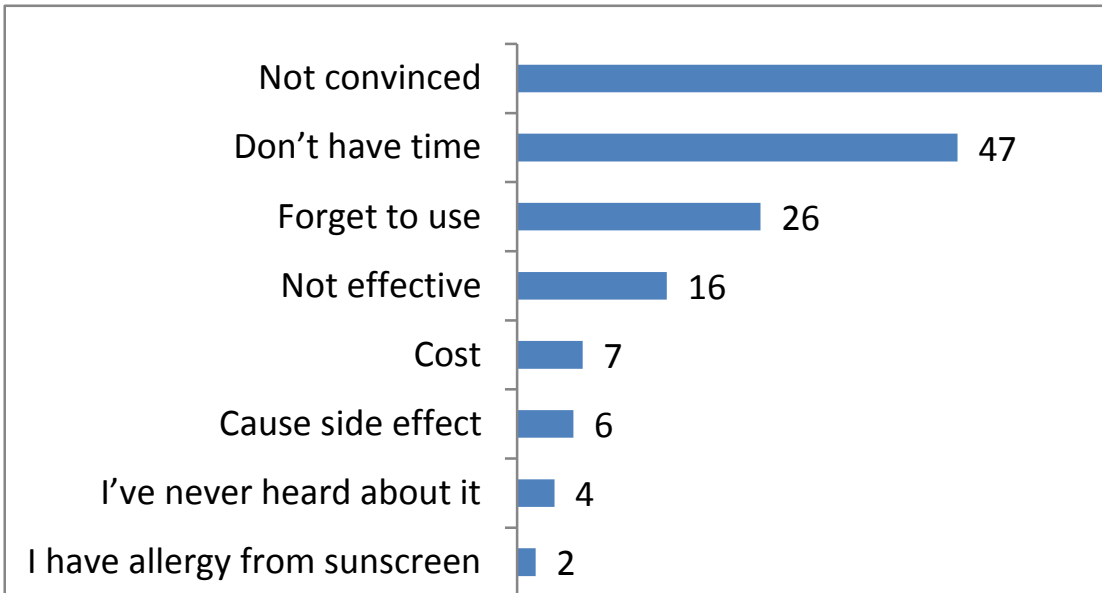

Figure 5: Reasons for not using sunscreen among study participants.

The results of the current study revealed that four-fifths of the study participants reported the use of sunscreen on the face or face and hand. More than two-thirds of the study participants reported the use of sunscreen with SPF30-50 or more than 50. Only 4.8% of the participants reported that they used sunscreen for indoor activities, and two-thirds of participants used sunscreen on sunny &cloudy days. *Wear long clothes*, *stay in shade* and *avoid intense sunlight* were the main three method used by the study participants to protect from sun other than sunscreen as illustrated in table 3 and figure 6 below.

Table 3: Practice questions and their answers of the study participants.

Questions	Categories	Frequency	%
At which part of body you applied sunscreen	face	126	40
	Face & hand	125	39.7
	Face, hand & neck	19	6
	All exposed parts	45	14.3
Do you use broad spectrum sunscreen	Yes	71	22.5
	No	28	8.9
	Don’t know	216	68.6
What is the SPFof the sunscreen you use	15	15	4.8
	30-50	132	41.9
	>50	71	22.5
	Don’t know	97	30.8
Do you re-apply your sunscreen	yes	74	23.5
	I don’t re-apply	241	76.5
What is the amount of sunscreen you apply on the face	fingertip	225	71.4
	more than that	90	28.6
Do you use sunscreen when using electronic devices?	Yes	7	2.2
	No	308	97.8
Do you use sunscreen for indoor activities?	Yes	15	4.8
	No	300	95.2
Use sunscreen	On sunny days only	106	33.7
	Sunny & cloudy days	209	66.3

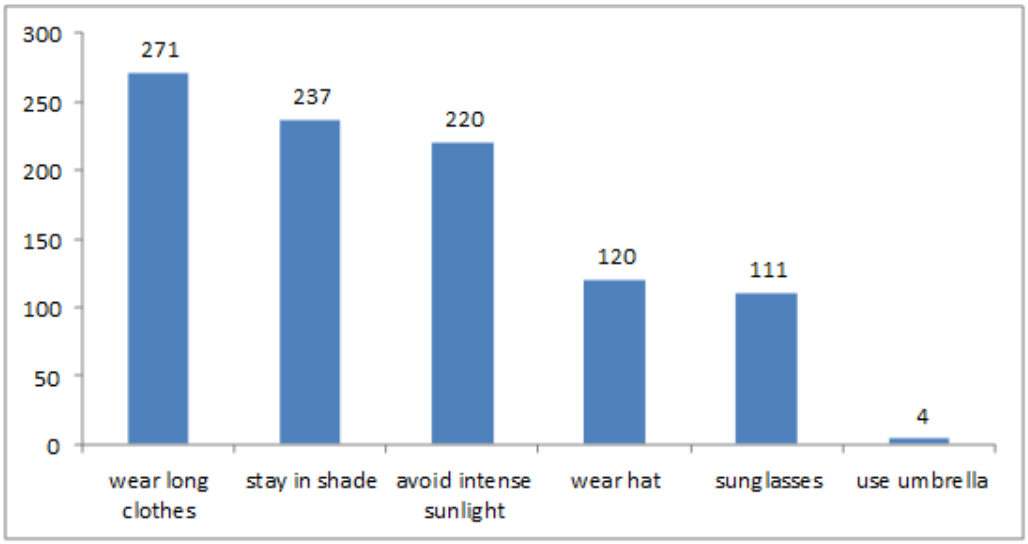

Figure 6: Sun protection Methods used by the participants other than sunscreen.

Most of the study participants (93.3%) reported that they advise people to use sunscreen (Figure 7). The influence that promoted the study participants to use sunscreen was mainly social media, followed by doctors (Figure 8).

Figure 7: percentage of participants advising others on sunscreen use.

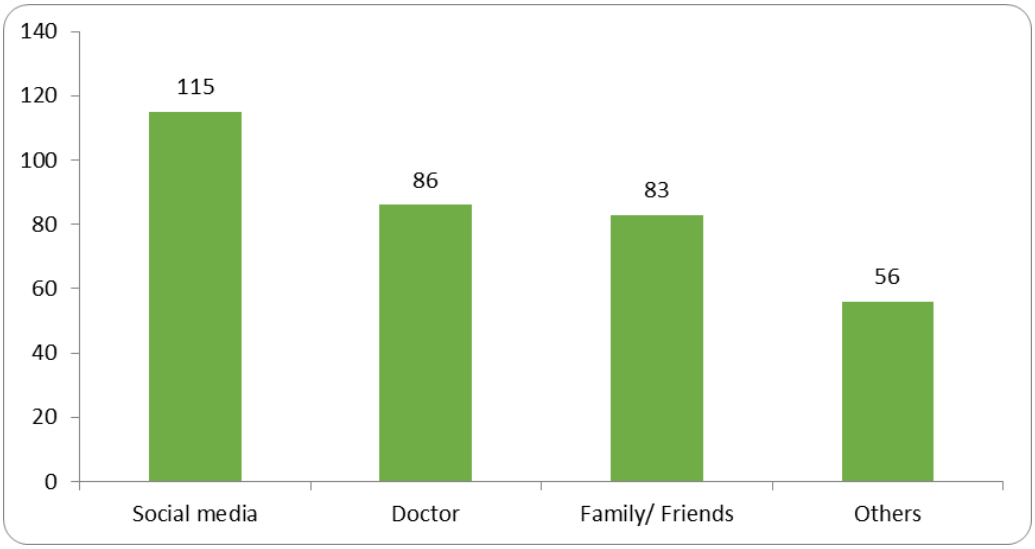

Figure 8: The influence that promoted the participants to use sunscreen.

The analysis of data of the current study revealed that there was significant difference in mean knowledge score among the four colleges i.e. Pharmacy college students followed by Nursing college students revealed significantly higher Mean Knowledge Score than others (p<0.001). The Mean Knowledge Score of females was significantly higher than that of males (p<0.001). Participants with good monthly income and history of dermatological disease had significantly higher Mean Knowledge Score (p<0.001). The results concluded that participants who used sunscreen had significantly higher Mean Knowledge Score (p<0.001), as shown in table 4.

Table 4. Association of the socio-demographic characteristics of participants and the Mean Knowledge Score.

	Categories	Mean Knowledge Score	SD	P value
College	Pharmacy	0.70	0.17	<0.001*
	Nursing	0.58	0.22	
	Education	0.50	0.20	
	Engineering	0.48	0.23	
Age (years)	20	0.57	0.20	0.448
	21	0.58	0.23	
	22 and more	0.52	0.24	
Sex	Male	0.42	0.21	<0.001*
	Female	0.65	0.17	
Work	Yes	0.60	0.20	0.343
	No	0.56	0.22	
Residence	Rural	0.57	0.23	0.975
	Urban	0.57	0.22	
Marital status	Single	0.57	0.22	0.267
	Married	0.60	0.24	
Monthly income	Good	0.62	0.20	<0.001*
	Average	0.51	0.23	
	Weak	0.49	0.28	
History of sunburn	Yes	0.57	0.24	0.904
	No	0.57	0.21	
History of dermatological disease	Yes	0.68	0.17	<0.001*
	No	0.55	0.22	
Use of sunscreen	Daily	0.68	0.16	<0.001*
	Sometimes	0.58	0.178	
	Rarely	0.55	0.15	
	Never	0.33	0.19	

* Significant P value of less than 0.05.Mann-Whitney test or Kruskal-Wallis test was used for abnormally distributed variables.

Association of the socio-demographic characteristics of participants and the use of sunscreen revealed that 94% of female participants use sunscreen compared to only 16.4% of males and this difference was statistically significant (p<0.001).

The results showed that participants with no work had a significantly higher proportion of use of sunscreen than workers (p=0.004). Participants with good monthly income and a history of dermatological disease had a significantly higher proportion of use of sunscreen (p<0.001), as shown in Table 5 below.

Table 5: Association of the socio-demographic characteristics of participants and the Use of sunscreen.

	Categories	Use of sunscreen		P value
		Daily/ Sometime	Rarely/never	
College	Pharmacy	70 (66)	36 (34)	0.122
	Nursing	80 (74.8)	27 (25.2)	
	Education	61 (61)	39 (39)	
	Engineering	65 (61.3)	41 (38.7)	
Age (years)	20	119 (64.7)	65 (35.3)	0.709
	21	125 (67.9)	59 (32.1)	
	22 and more	32 (62.7)	19 (37.3)	
Sex	Male	25 (16.4)	127 (83.6)	<0.001*
	Female	251 (94)	16 (6)	
Work	Yes	21 (46.7)	24 (53.3)	0.004*

	No	255 (68.2)	119 (31.8)	
Residence	Rural	61 (67)	30 (33)	0.792
	Urban	215 (65.5)	113 (34.5)	
Marital status	Single	259 (66.1)	133 (33.9)	0.267
	Married	17 (63)	10 (37)	
Monthly income	Good	178 (79.1)	47 (20.9)	<0.001*
	Average	93 (51.1)	89 (48.9)	
	Weak	5 (41.7)	7 (58.3)	
History of sunburn	Yes	75 (63.6)	43 (36.4)	0.532
	No	201 (66.8)	100 (33.2)	
History of dermatological disease	Yes	46 (88.5)	6 (11.5)	<0.001*
	No	230 (62.7)	137 (37.3)	
* Significant P value of less than 0.05. Chi-square test was used.				

DISCUSSION

The current study revealed that most participants were female (64%) due to the higher proportion of female students enrolled. Additionally, some male students declined to participate during the recruitment phase, contributing to the gender imbalance. Females also demonstrated higher knowledge and sunscreen usage compared to males, a statistically significant finding; this trend aligns with and is supported by other studies done in Iraq and Jordan.[11],[12][13]

Regarding knowledge, the results show that the prevention of sunburn was the most notable benefit the students were aware of, with about 88% answered correctly; this finding is consistent with a previous study conducted among medical students in Malaysia reporting sunburn prevention as one of the most recognized benefits of sunscreen use[14] However, knowledge about the broader long-term benefits, specifically skin cancer prevention, was significantly lower, with only 55% of students answering correctly. This contrasts with a study at King Abdulaziz University, Saudi Arabia, where 72% responded correctly.[15] Most students demonstrate poor knowledge in certain aspects; only 32% recognized that broad spectrum sunscreen which prevents sun damage should contain filters against both UVA, UVB, and blue light. Students also demonstrated a low level of knowledge about the recommended SPF (>30), with only 30% providing correct answers. This finding aligns with the study of King Abdulaziz University, Saudi Arabia, where 49% answered correctly.[15] It is recommended to apply sunscreen at least 15 minutes before sun exposure[16]; 76% of students answered correctly; also, 63% recognized the importance of using water-resistant sunscreen while swimming, These findings are consistent with results from Baghdad University, where over half of the students have good awareness about the time of sunscreen application, and 63% believed that sunscreen loses its effectiveness after sweating or swimming.[11]

In terms of recommendations for pregnant women and children, only 45% of Students endorse that it is advised for pregnant women to use sunscreen, as hyperpigmentation is a common skin concern during pregnancy.[17] Additionally, only 17% believed children older than six months could use sunscreen. This is similar to findings in Jordan, where many participants thought that children should not use sunscreen.[13]

Regarding practice and attitude, the current study found that 75% of the students use sunscreen in various ways as the results show, which is similar to prevalence rates of 79%and71% reported in studies conducted at Baghdad University and Mosul in Iraq, respectively[11][12] In other countries, this prevalence aligns with that of university students in Libya.[18], but it is still higher than the prevalence rates of 51%, 39%, and 42% reported in Saudi Arabia, Jordan, and Malaysia, respectively[19][20][21] In contrast, studies in Turkey and Indonesia reported much higher usage rates of 94%and 100%, respectively.[22][23] Despite the high prevalence of sunscreen usage, only 66% of students used it regularly, which indicates inconsistent sunscreen usage.

Some Studies have shown that sunscreen should also be applied on cloudy days since UV radiation is still high, even in the presence of clouds and cold weather[24][25], Fortunately, most students apply sunscreen on both sunny and cloudy days, indicating good practice in concordance with their good knowledge, as 68% of them believe it is better to use sunscreen in all seasons; this contrasts with the study in Saudi Arabia, where most students apply sunscreen only on sunny days, mainly in summer.[19]

Most students apply enough amount of sunscreen with SPF 30 or higher; this agrees with the current recommendations from AAD.[16] Only 23%% of the students use broad spectrum sunscreen. Additionally, the majority of them do not consistently reapply, and 5% only use sunscreen indoors; these findings highlight a gap in effective sunscreen practices and indicate the need to explain the adequate method of using sunscreen and the importance of following the instructions to obtain the benefits from using it; otherwise, it has much less worth, this is similar to the study in Baghdad university Where most students use sunscreen once a time in the day,[11] Another study in Saudi Arabia also demonstrated Inadequate sunscreen use as only 28% of students use a broad-spectrum sunscreen, and most do not reapply it.[19] Studies in Jordan and Germany also revealed deficits in sunscreen use.[26][13]

About **reasons for not using sunscreen among students**, Inconvenience, lack of time, and forgetting to use were the top reasons, this may be due to their busy schedules, they prioritize other tasks and may not feel the immediate need for sun protection, In contrast, side effects, cost, and lack of compliance were the main reasons for not using sunscreen in another study done among people of color in Jordan[13] about factors that promote sunscreen use, students cited social media as a significant influence**,** this outcome is consistent with results from other studies.[9][12]

CONCLUSION

The overall knowledge of sunscreen use among participants was moderate, with significant gaps identified in both knowledge and practices, particularly in methods of sunscreen application, knowledge regarding broad-spectrum sunscreen, and the appropriate use of sunscreen for children and pregnant women. About two-thirds of students use sunscreen regularly, which indicates inconsistent sunscreen use. Inconvenience, lack of time, and forgetting to use were the top reasons for not using sunscreen. Social media emerged as a strong influence on students' attitudes toward sunscreen use. Mean knowledge score of females was statistically significantly higher than males. Gender (female), good monthly income, and history of dermatological disease were found to be significantly associated with higher knowledge and use of sunscreen.

REFERENCES

1. NardaKrutmann J, Passeron T, Gilaberte Y, Granger C, Leone, G M, Schalka S, et al. Photoprotection of the future: challenges and opportunities. J Eur Acad Dermatology Venereol., 2020; 34(3): 447–54.
2. Gromkowska-Kępka KJ, Puścion-Jakubik A, Markiewicz-Żukowska R, Socha K. The impact of ultraviolet radiation on skin photoaging—review of in vitro studies. J Cosmet Dermatol., 2021; 20(11): 3427–31.
3. Young AR, Claveau J, Rossi AB. Ultraviolet radiation and the skin: Photobiology and sunscreen photoprotection. J Am Acad Dermatol., 2017; 76(3): S100–9.
4. Rodríguez-Gambetta P, Moscoso-Porras MG, Taype-Rondan A. Factors associated with regular sunscreen use by medical students of a Peruvian university. J Prev Med Hyg., 2016; 57(3): E172.
5. American Academy Of dermatology. The latest in sun protection. 2024.
6. Adler BL, DeLeo VA. Sunscreen safety: A review of recent studies on humans and the environment. Curr Dermatol Rep., 2020; 9: 1–9.
7. Salman SA, Shahid S, Ismail T, Chung ES, Al-Abadi AM. Long-term trends in daily temperature extremes in Iraq. Atmos Res., 2017; 198: 97–107.
8. Rahimi J, Khalili A, Butterbach-Bahl K. Projected changes in modified Thornthwaite climate zones over Southwest Asia using a CMIP5 multi-model ensemble. Int J Climatol., 2019; 39(12): 4575–94.
9. Awadh AI, Jamshed S, Elkalmi RM, Hadi H. The use of sunscreen products among final year medicine and pharmacy students: a cross-sectional study of knowledge, attitude, practice, and perception. J Res Pharm Pract., 2016; 5(3): 193–9.
10. Sachdeva S. Fitzpatrick skin typing: Applications in dermatology. Indian J Dermatol Venereol Leprol., 2009; 75: 93.
11. Al Battat R, Aram D, Hanoon AM, AyyedKadhim O. Awareness about Sun Protection among Medical Students. Ann Rom Soc Cell Biol., 2021; 25(6): 15216–27.
12. Shanshal SA, Khaleel SM, Hammoodi SH. Sun Exposure and Usage of Sun Protection: Knowledge, Perception and Practice among University Students. Malaysian J Med Sci MJMS, 2024; 31(2): 208.
13. Al-Qarqaz F, Marji M, Bodoor K, Al ALshiyab D, Muhaidat J, Al Ghamdi S. Awareness about proper use of sunscreen in people of color: A Jordanian-based survey. J Cosmet Dermatol., 2020; 19(5): 1131–6.
14. Azmi N, Ismail FF, Manan MM. Knowledge and factors associated with good knowledge of sunscreen among pharmacy undergraduate students: a cross-sectional study. Int J Pharm Nutraceutical Cosmet Sci., 2023; 6(2): 12–23.
15. Alzahrani NA, Fathi TT, Mortada HH, Bukhari DA, Ashor NM, Mleeh NT, et al. Awareness, knowledge and behavior of medical personnel regarding skin cancer, sun-related hazards and sunscreen utilization at King Abdulaziz University Hospital, Jeddah. Int J Res Dermatol., 2018; 4(2): 105.
16. Dermatology AAO. Sunscreen FAQs. 2024.
17. Putra IB, Jusuf NK, Dewi NK. Skin changes and safety profile of topical products during pregnancy. J Clin Aesthet Dermatol., 2022; 15(2): 49.
18. Benzaed, SamarBeshna E, Amir S, Swead RT, Aldoubali KA, Ashour AM, Elouzi AA. Perception, knowledge and attitude of solar radiation diseases and use of sun screen among Al Zawia Medical University Students in Libya. Med Pharm J., 2022; 1(2): 74–83.
19. AlJasser MI, Aljumah A, Alzaydi M, Alassaf A, Alassafi S, Alassafi MT, et al. Sunscreen use among a population of Saudi University students. Dermatol Res Pract., 2020; 2020(1): 4732721.
20. Ala. Knowledge, Attitude, and Practice toward Skin Cancer Prevention and Detection among Jordanian Medical Students: A Cross-Sectional Study. J Skin Cancer, 2022; 2022(1): 6989827.
21. HNb HF, Yea LH, Hewage M, Azme FSM, Soe HHK, Moe S, et al. Knowledge of Sunscreen Usage and Skin Cancer Among Malaysian Medical Students–A cross sectional study, 2023.
22. Öztekin C, Öztekin A, Senel E. ATTITUDES TOWARDS SUN PROTECTION AND SKIN CANCER AMONG FACULTY MEMBERS AND STUDENTS OF MEDICINE AND OF ARTS/SCIENCES AT A TURKISH UNIVERSITY. Ankara Med J., 2020; 20(1).

23. Novitasari T, Prajitno S, Indramaya DM. Behavior of sunscreen usage among medical students. Berk Ilmu Kesehat Kulit dan Kelamin., 2020; 32(3): 174–81.
24. Wilson BD, Moon S, Armstrong F. Comprehensive review of ultraviolet radiation and the current status on sunscreens. J Clin Aesthet Dermatol, 2012; 5(9): 18.
25. Andersen PA, Buller DB, Walkosz BJ, Scott MD, Maloy JA, Cutter GR, et al. Environmental cues to UV radiation and personal sun protection in outdoor winter recreation. Arch Dermatol., 2010; 146(11): 1241–7.
26. Görig T, Schneider S, Seuffert S, Greinert R, Diehl K. Does sunscreen use comply with official recommendations? Results of a nationwide survey in Germany. J Eur Acad Dermatology Venereol., 2020; 34(5): 1112–7.