

**ASSESSMENT OF SUN HEALTH AWARENESS LEVELS AMONG MEDICAL SCIENCES FEMALE STUDENTS AT AJMAN UNIVERSITY**Amna Alawad<sup>1</sup>, Heba Alyassin<sup>1</sup>, Arwa Alrefai<sup>1</sup>, Ammar Abdulrahman Jairoun<sup>2</sup> and Moyad Shahwan<sup>1\*</sup><sup>1</sup>College of Pharmacy and Health Sciences, Ajman University, Ajman, United Arab Emirates.<sup>2</sup>Consumer Product Safety Section, Public Health and Safety Department, Dubai Municipality, UAE.**\*Corresponding Author: Dr. Moyad Shahwan**

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**ABSTRACT**

**Background:** The incidence of skin cancer has been increased significantly over the last 20 years and it has been shown the risk of someone to develop skin cancer is related to cumulative sun exposure over a lifetime This highlights the need to find out and understand of medical students' knowledge, and practice regarding sun protection, hence devising appropriate educational interventions to bridge the gap between knowledge and practice.

**Objectives:** This study aimed to investigate knowledge and practice towards sun protection among medical students. **Materials and methods:** In this study, 298 students participated in the questionnaire survey on students' knowledge and practice toward sun protection. Independent t-test and ANOVA were used to analyze questionnaire and to determine the differences in participants' responses in term of demographic. **Results:** The results showed that 8.1% (n = 24) of the respondents had good Knowledge and practice towards sun protection, 44.6% of the studied subjects (n = 133) had fair Knowledge and practice while 47.3% (n = 141) had poor Knowledge and practice. Significant differences in the knowledge and practice score of students with regard to the level of parent's education, skin tones and incidence of sunburns (P=0.017), (P=0.003), (P=0.005) respectively. On the other hand no significant association was reported in the knowledge and practice score of the respondents with regards to their age and family history of skin cancer (P= 0.153), (P= 0.932) respectively. **Conclusion:** The existing results will be used in developing a well planned program and clear polices to increase the level of awareness regarding the good practice towards sun protection such as wearing protective clothing and routinely using sun screen. Also it's important to organize educational campaigns to address the sun hazards that will help to raise awareness, knowledge and practice medical students towards sun protection

**KEYWORDS:** Skin, Cancer, Sun Screen, skin, students, health.**INTRODUCTION**

Human exposure to solar ultraviolet radiation has important public health implications.<sup>[1,2]</sup>

People are exposed to large quantities of UV radiation in part due to the thinning of the stratospheric ozone layer, but also through several other sources, such as: living and travelling in sunny climates, excessive sunbathing and sun bed use, outdoor sports and the usage of appliances and devices that emit UV radiation in domestic and industrial settings.<sup>[3-5]</sup> 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.<sup>[6]</sup> Worldwide some 2-3 million cases of non-melanoma skin cancer and 132,000 cases of malignant melanoma skin cancer are diagnosed every year. 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.<sup>[7-9]</sup> Although the mortality rate of skin cancer is relatively low, its impact on other health aspects is high and the treatment of undesired aesthetic damage is costly. In terms of disability-adjusted life year rates (DALY), 1.5 million days are thought to be lost worldwide due to UV radiation. Today, one in three cancer cases are diagnosed as skin cancer.<sup>[10]</sup> According to 2011 epidemiology statistics from the cancer section of the Turkish Department of Health the incidence of skin cancer in Turkey is 18.91 per 100,000 population and it is the third most commonly diagnosed type of cancer.<sup>[11]</sup> Epidemiological studies show that the sun is the most significant environmental factor in regard to the development of skin cancer and many other skin conditions. The first step to reduce the incidence of skin cancer is to increase levels of awareness of the harmful effects of the sun and how one can better protect themselves from UV radiation.<sup>[12,13]</sup> It is vitally important that education reflect advances in knowledge in regard to protection against the potentially harmful effects of the sun so that changes in behaviour patterns are

produced.<sup>[12]</sup> Education is the key in raising awareness.<sup>[14,15]</sup> Studies have been carried out in many countries to determine awareness levels of the effects of the sun, of skin cancer and of behaviour with regard to sun protection, usually with the intention of creating effective health campaigns to prevent skin cancer.<sup>[5]</sup> The purpose of this study is to raise levels of awareness, change attitudes and influence behaviour in regard to sun health among health services professional medical students.

#### MATERIALS AND METHODS

This cross sectional study was carried out between 1<sup>st</sup> november 2016 and 1<sup>st</sup> January 2017 on the medical sciences female students of Ajman University. The questionnaire that was used for data collection was created through a search of relevant literature. This cross sectional study was carried out between 1<sup>st</sup> november 2016 and 1<sup>st</sup> January 2017 on the medical female students of Ajman University. The study did not use sampling, as all 298 students on the campus were included. The questionnaire that was used for data collection was created through a search of relevant literature and consisted of five questions about the socio-demographic characteristics of each student and 15 questions investigating the student's knowledge of the effects of the sun.<sup>[13,16,17]</sup> Subjects were given background information about the purpose of the study and its methodology and were given the opportunity to ask questions. Names are not used as they are not related to the reliability of the survey. Students who were absent or who did not wish to take part in the study have not been included. The data was analysed using SPSS (Statistical Package for Social Sciences) 23.0. Following the statistical evaluation of data and the summarization of frequencies and percentages.

#### RESULTS

##### Demographic and participants' characteristics

This cross sectional study was conducted among female medical student of Ajman university to assess the knowledge and the practice towards sun protection. The survey was conducted between January 2017 to May 2017. Three hundred questionnaires were distributed among female medical students, 298 were returned (response rate = 99.3%). About 75.5% (n = 225) of students who participated in the survey were aged between 18-19, 23.2% (n =69) aged between 20-23 and only 1.3% (n = 4) with age more than 23 (>23). Of the sampled student's parents, 61 (20.5%) had less than university degree, and 237 (79.5%) were university graduates. Overall, 261 (87.6%) participants belonged to faint Skin tone and 37 (12.4%) belonged to dark Skin tone. The majority (97.7%) of the respondents were not belong to family of someone who had skin cancer (Table1).

Table 1: Demographic and participants' characteristics

Demographic	N	(%)
Age Group:		
Less than 23 years	225	(75.5%)
≥ 23years	69	(23.2%)
Parent's education level		
Primary education level	4	(1.3%)
Secondary education level	20	(6.7%)
University level	41	(13.8%)
237		(79.5%)
Skin tone		
Faint	261	(87.6%)
Dark	37	(12.4%)
Have you ever been exposed to sunburn		
Yes	145	(48.7%)
No	153	(51.3%)
Having a close family member with skin cancer		
Yes	7	(2.3%)
No	291	(97.7%)

**Assessment of Knowledge and Practices about Sun Protection among female medical students.**

**Table 2** presents the descriptive analysis of the knowledge and practice of participants. A 15-item questions package was used to evaluate participants' knowledge and practice towards sun protection. A correct option was scored 1 while incorrect response was scored zero. A total score of 15 was obtainable. Knowledge and practice scores for participants were calculated and summed up to give the total knowledge

score. Knowledge score ranged between 0 and 15. For study participants, the overall mean of knowledge score was 7.65 with  $\pm$  (S.D) of 2.10. A score of 70% and above was judged to be good, 50%-69% fair and <50% poor. In all, only 8.1% (n = 24) of the respondents had good Knowledge and practice towards sun protection, 44.6% of the studied subjects (n = 133) had fair Knowledge and practice while 47.3% (n = 141) had poor Knowledge and practice.

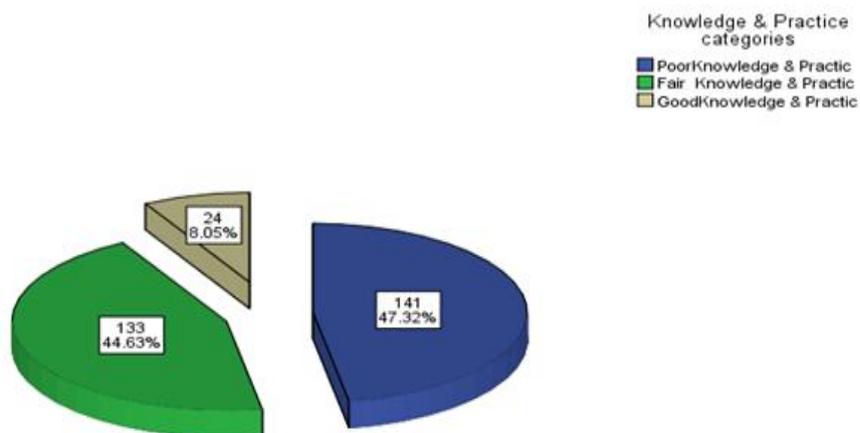


Figure 1: Distribution of participant's knowledge and practice category

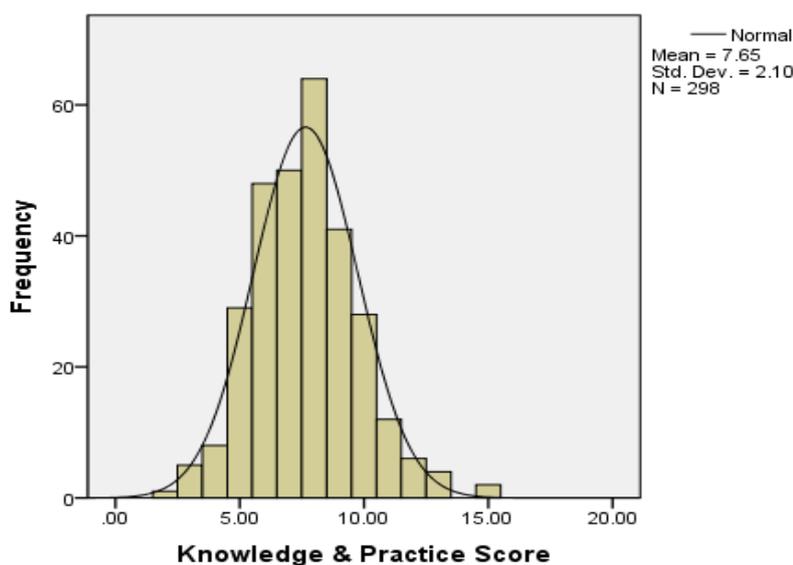


Figure 2: Distribution of participants' knowledge and practice score

Table 2: Knowledge & Practice assessment

Knowledge & Practice Items		N	%
1. Sunbathing is damaging to health	Correct Answer	110	(36.9%)
2. Tanned skin doesn't protect from sunlight	Correct Answer	89	(29.9)
3. Vitamin D is absorbed from the sun through the skin	Correct Answer	241	(80.9%)
4. It is dangerous to stay in the sun for a long time with sunscreen	Correct Answer	235	(78.9%)
5. It is necessary to use sunscreen to avoid the harmful effects of exposure to the sun	Correct Answer	284	(95.3%)
6. Staying out of the sun for regular intervals don't to prevent sun burn	Correct Answer	221	(74.2%)

7. Sun burn can occur even when the sun on the skin doesn't feel warm	Correct Answer	<b>170</b>	<b>(57.0%)</b>
8. Exposure to the sun increases aging, wrinkling and discolouration of the skin	Correct Answer	<b>202</b>	<b>(67.8%)</b>
9. A tan is evidence of damage to the skin	Correct Answer	<b>99</b>	<b>(33.2%)</b>
10. It is possible to become sunburn on a cloudy day	Correct Answer	<b>43</b>	<b>(85.6%)</b>
11. Sunlight is not beneficial behind the window glass	Correct Answer	<b>118</b>	<b>(60.4%)</b>
12. Sunburn in childhood is a more significant factor in skin cancer than sunburn as an adult	Correct Answer	<b>83</b>	<b>(27.9%)</b>
13. Sunlight has an immunosuppressive effect	Correct Answer	<b>48</b>	<b>(16.1%)</b>
14. Light colored clothing is a better protection against the sun than dark colored clothing	Correct Answer	<b>205</b>	<b>(68.8%)</b>
15. Loose clothes are better protection against the sun than tight clothes	Correct Answer	<b>131</b>	<b>(44%)</b>

### Association of Demographic Characteristic and Mean knowledge and practice Score

The participants' responses to knowledge and practice questions were assessed to determine whether there are significant differences in terms of their demographic data. The comparison analysis is presented in **Table 3**. There was no effect of age on knowledge and practice score towards sun protection ( $P=0.153$ ). There was an effect shown of Parent's education level on knowledge and practice score of the students on sun protection ( $P=0.008$ ). Student s' parents with secondary education level scored remarkably better than those Parents with primary education level ( $P=0.017$ ). The same pattern of the results was observed between primary and university education level ( $P=0.010$ ). There was an effect seen of skin tone on the knowledge and practice score ( $P=0.003$ ).

Students with Faint skin tone scored remarkably better than those with dark skin. Moreover, students who have been exposed to sunburn scored remarkably better than those did not exposed to sunburn ever ( $P=0.005$ ). However, having a close family member with skin cancer is not associated with knowledge and practice score ( $P=0.932$ ).

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**Table 3: Factors associated with knowledge and practice score**

Variables	Knowledge and Practice Score		P-value
	N (%)	Mean $\pm$ (SD)	
<b>Age:</b>			
Less than 23 years	225(75.5%)	7.74 $\pm$ (2.07)	0.153
$\geq$ 23years	73(24.5%)	7.34 $\pm$ (2.16)	
<b>Parent's education level</b>			
Primary education level	20(6.7%)	6.25 $\pm$ (2.09)	*0.008
Secondary education level	41(13.8%)	7.87 $\pm$ (2.17)	
University level	237 (79.5%)	7.72 $\pm$ (2.05)	
<b>Skin tone:</b>			
Faint	261(87.6%)	7.78 $\pm$ (2.03)	*0.003
Dark	37(12.4%)	6.70 $\pm$ (2.31)	
<b>Have you ever been exposed to sunburn:</b>			
Yes	145 (48.7%)	8.0 $\pm$ (2.15)	*0.005
No	153(51.3%)	7.3 $\pm$ (1.99)	
<b>Having a close family member with skin cancer</b>			
Yes	7 (2.3%)	7.71 $\pm$ (3.77)	0.932
No	291(97.7%)	7.64 $\pm$ (2.05)	
* P < 0.05 is considered significant			

## DISCUSSION

The incidence of skin cancer has been increased significantly over the last 20 years and it has been shown the risk of someone to develop skin cancer is related to cumulative sun exposure over a lifetime.<sup>[18]</sup> Despite of the fact that, 80% of skin cancer cases are preventable with the implementation of sun protection measures the incidence of skin cancer is still rising.<sup>[6]</sup> According to several studies, the UV rays account to 65–90% of the cases of melanoma skin cancer. These findings were consistent with in the USA where one in five people develop skin cancer at some point in their lives.<sup>[7-9]</sup> The awareness on skin cancer and its seriousness is the first step towards curtailing its progress. This current study was carried to evaluate the knowledge and practice of medical towards sun protection hence devising appropriate educational interventions to bridge the gap between knowledge and practice.

In the early winter in UAE it is not common for people to use umbrellas for sun protection. We established that for women (67.8%) having already had discoloration of skin was seen as the most significant risk factor for future occurrences. Eray *et al*<sup>[3]</sup> had similar findings. Today with increasing awareness of the subject, genetic predisposition appears to be seen as one of the main causes of skin cancer. A further important result that we were able to establish was that staying in the sun for a long time was seen to be a high risk factor. The analysis done by Eray *et al* Showed that sunburns and an abundance of moles are also considered as high risk factors.<sup>[3]</sup> There was an effect shown of Parent's education level on knowledge and practice score of the students on sun protection ( $P=0.008$ ). Student s' parents with secondary education level scored remarkably better than those Parents with primary education level ( $P=0.017$ ). The same pattern of the results was observed between primary and university education level( $P=0.010$ ). There was an effect seen of skin tone on the knowledge and practice score ( $P=0.003$ ). Students with Faint skin tone scored remarkably better than those with dark skin. Moreover, students who have been exposed to sunburn scored remarkably better than those did not exposed to sunburn ever ( $P=0.005$ ). However, having a close family member with skin cancer is not associated with knowledge and practice score ( $P=0.932$ ).

This is a significant statistic ( $p < 0.05$ ). This suggests that particularly among the students, as a result of education programs in university, that in order to increase awareness of the harmful effects of the sun education is vital. All students, starting at primary school need to be informed about the harmful effects of the sun and appropriate sun protection behaviors. Lectures and seminars should also be provided in higher education. It is also recommended that information and training be provided to students at regular intervals within organizations. In our research, we assessed the awareness of the benefits and dangers of the sun. It was found that 80.9% of the women were aware of the positive effect of

vitamin D synthesis. In the study done by Eray *et al*<sup>[3]</sup> in 2012 these figures were 86.3% and 57.5% for positive effects of sun, which bears some similarity to our results. In our study the most widely recognized negative effect of the sun proved to be increases aging, wrinkling and discoloration of the skin which were known about by 67.8% of women. One difference between our study and that of Kaymak *et al*.<sup>[13]</sup> was that they were able to establish a degree of awareness of the sun being implicated in some allergic reactions. This is likely to be accounted for by differences in the populations surveyed. The most common sources of information about the effects of the sun were found to be the doctors and the internet. This suggests that increased levels of education and information with regard to the harmful effects of the sun through media channels could increase general awareness. It is recommended that legislation be put in place to increase the ease with which this information can be disseminated through the mass media to the general public.

Although sun screen is important in Sunny country like UAE all people expose to sun at least 4 hours daily so female students in AU also have positive response to agree that its dangerous to stay in sun for long time with sun screen, the average reached 78.9% it has similar finding.<sup>[3]</sup>

Many people think that they will protect from sunburn in cloudy day, although others think that even if there are clouds, the sun ray will reached and effect the skin .actually little effect. in our research we found the average reached(85.6%) by support our point of view. while in in other study the percentage of student support the idea is (53%).<sup>[3]</sup>

The most correctly answered question by the respondents at 67.8% was that of exposure to the sun causing the skin to aging, wrinkle and discoloration more rapidly. The least accurately understood premise, regarding that sunlight has an immunosuppressive effect, was only responded to correctly by 16.1% of the sample. Also, clothes have important role in sun protection. it's found that light colored clothing is better protection against the sun than darker one, in our research we found that the percentage reached 68.85%, while in other study the average reached 86.6%.<sup>[3]</sup>

Improper behavior sun protection is one of the markers of poor knowledge. The present study revealed poor knowledge and practice among students towards sun protection in which only 8.1% ( $n = 24$ ) of the respondents had good Knowledge and practice towards sun protection. This finding run similarly with another study carried out among of 396 students in Turkey where the behavior of the students' group about sun protection was shown to be unsatisfactory.<sup>[1]</sup> In another study conducted by Eray *et al.* among 414 students to assess their levels of awareness, attitudes and behavior towards sun protection, the levels of knowledge about the effects

of the sun among sample students were  $8.64 \pm 2.35$ . This finding was reasonably similar to our study in which the overall mean of knowledge score was 7.65 with  $\pm$  (S.D) of 2.10.<sup>[2]</sup>

The results in our study also showed a significant differences in the knowledge and practice score of students with regard to the level of parent's education, skin tones and incidence of sunburns ( $P=0.017$ ), ( $P=0.003$ ), ( $P=0.005$ ) respectively. On the other hand no significant association was reported in the knowledge and practice score of the respondents with regards to their age and family history of skin cancer ( $P= 0.153$ ), ( $P= 0.932$ ) respectively. This was in contrast to Eray et al. study where significant associations were found in the level of awareness and family history with regards the age and family history ( $p < 0.05$ ).<sup>[2]</sup>

This poor knowledge and practice about sun protection shows management application gap which needs reinforcement and reflects the need to promote awareness on this topic during course curriculums.

## CONCLUSION

In conclusion, in middle east countries like UAE, having a tanned complexion in the early warm part of the winter is seen as cosmetically desirable. At the same time, melanoma and other skin cancers are being seen more frequently, although due to the lack of comprehensive records, full and accurate statistics are not available.<sup>[2,9]</sup> This means that neither the research into the subject nor general health warnings are sufficient. This study highlights the need for the mass media to be used to increase the adoption of sun protection behaviors such as wearing protective clothing and routinely using sun screen among the general public. It is also suggested that open air sporting events and general entertainment activities be scheduled at safer times with the hopes of decreasing excessive sun exposure. And finally, the implementation of general education programs that lead to life-long, unsafe behaviors is greatly encouraged

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