

# Awareness of Skin Cancer, Prevention, and Early Detection among Turkish University Students

Ziyafet Uğurlu, Sevcan Avcı Işık, Berrak Balanuye, Elif Budak, Nalân Özhan Elbaş, Sultan Kav

Department of Nursing, Faculty of Health Sciences, Başkent University, Ankara, Turkey

Corresponding author: Sevcan Avcı Işık  
E-mail: sevcanavci@baskent.edu.tr

Received: September 03, 2015, Accepted: October 05, 2015

## ABSTRACT

**Objective:** The aim of this study was to determine the awareness about skin cancer, prevention, and early detection among university students. **Methods:** This descriptive cross-sectional study was carried out with 404 students in a university located in Ankara, the capital city of Turkey. A 35-item questionnaire was used for data collection. **Results:** Less than half of the students (37.9%) had knowledge about skin cancer mostly through the internet (24.5%) and media (24.1%). Half of them aware of the risk factors; mostly as avoiding direct exposure to the Sun between 10 am and 4 pm (45.3%); smoking and alcohol (38.4%); having fair skin color (34.9%); and ultraviolet light exposure (25.7%). Only one-third of them (32.9%) are

knowledgeable about skin cancer signs and symptoms, such as a change in color and appearance of the nevus/moles (24%). The majority of the responders (77.3%) did not know about screening tests for skin cancer and only 18 (4.5%) students were practicing skin self-examination. **Conclusions:** This study showed a lack of knowledge about skin cancer, prevention, and early detection among university students and reported the need for educational interventions to raise awareness in this target group.

**Key words:** Nursing, prevention, skin cancers, skin self-examination, university students

## Introduction

There has been a significant increase in the incidence of skin cancer over recent years, and it is the second most common cancer in adolescents and young adults aged 15-29 years. The most serious form of skin cancer is melanoma, which is expected to be diagnosed in about 76,100 persons in 2014, in the USA.<sup>[1]</sup> According to Ministry of Health, Turkish Public Health Institute, Cancer Control Department statistics total skin cancer cases was 4019 in 2009.<sup>[2]</sup>

The majority of skin cancers are caused by unprotected exposure to excessive ultraviolet radiation (UVR), primarily from the Sun. Stratospheric ozone depletion has exacerbated these health effects by allowing increased UVR to reach the Earth's surface.<sup>[1]</sup> Therefore, Sun exposure prevention is an important issue for public health.<sup>[3]</sup> Other risk factors include fair skin color, easily burns skin, red or blond hair, blue or green eyes, freckles, the presence of moles, and family history of skin cancer.<sup>[4,5]</sup>

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

**For reprints contact:** reprints@medknow.com

**Cite this article as:** Uğurlu Z, Işık SA, Balanuye B, Budak E, Elbaş NÖ, Kav S. Awareness of skin cancer, Prevention, and Early Detection among Turkish University Students. *Asia Pac J Oncol Nurs* 2016;3:93-7.

Access this article online

Quick Response Code:



Website: [www.apjon.org](http://www.apjon.org)

DOI:  
10.4103/2347-5625.170969

Moreover, history of severe sunburns prior to age 10 is reported as a risk factor for developing melanoma in later age.<sup>[6]</sup>

It has been suggested that around 80% of skin cancer cases are preventable with the implementation of Sun protection measures and appropriate behaviors. Social norms, attitudes, and especially the desire to be exposed to the Sun up front, for example, get a tan are the important predictors for sunscreen. Sun-protection behavior and attitude begin at a young age, therefore, it is important to heighten the awareness in adolescents.<sup>[7]</sup> Individual, who develop such skills at a young age and more likely to adopt and sustain healthy lifestyle during the rest of their life. Since children and adolescents are an important target group for skin cancer prevention, developing comprehensive programs including physical, social, and organizational environments that promote UVR protection. Educating young people about Sun safety is strongly recommended.<sup>[1]</sup>

Sun-protection is not only necessary on the beach or at the swimming pool, but applies to all outdoor settings. Behavioral recommendations for the prevention of skin cancer aim to reduce exposure to UVR by limiting the time spent in the Sun, seeking shade particularly during periods of peak UVR, using sunscreen with a Sun protection factor (SPF) of 15 or higher, wearing protective clothing (hat, shirt, pants) and sunglasses, and making Sun safety a regular habit.<sup>[8]</sup>

Treatments for skin cancer are more effective and less disfiguring when it is found early. Important strategies aimed at improving early diagnosis of skin cancers include education about signs and symptom recognition. Since individuals have the most opportunities to examine their own skin, their involvement in detection is important and supported by American Academy of Dermatology. Screening consist of a total body skin examination to look for new or changing skin lesions including shape, color, and size.<sup>[9,10]</sup>

The literature revealed a range of studies from countries such as Australia, Germany, and the USA regarding skin cancer educational programs for children and adolescent.<sup>[7,11-13]</sup> However, in Turkey, there are limited studies with primary school students in the Western part<sup>[14,15]</sup> of the country in health services, vocational schools,<sup>[16]</sup> and university students.<sup>[17]</sup> This indicated that attitudes and behaviors of students are related to Sun-protection were not sufficient. Skin cancer prevention should start in early childhood and continue through a

person's lifetime. The aim of this study was to determine the awareness about skin cancer, prevention and early detection among university students.

## Methods

### Design and sample

This descriptive study was conducted at a university located in Ankara, Turkey, with 9530 students registered in the spring semester; the size calculated to 370 using systematic sampling method, by adding 10% more. Four hundred and four students were included. University students was from faculties (health sciences, medicine, dentistry, education, engineering, commercial science, communications, economics and administrative science, law, fine arts, design and architecture, and science and letters), the vocational school included social science, health science, technology, and English language department.

### Data collection

Data was collected using a questionnaire which was developed based on the literature<sup>[18,19]</sup> consisted 35 items in three parts. The first part contains 14 questions relating to general characteristics of the students. The second part included 6 questions to identify their knowledge about skin cancer. The third part included 15 questions covering about knowledge and behaviors related to screening and prevention. In this section, the students' responses were scored using 5 point Likert ranging from "always," "very often," "sometimes," "seldom" to "never," respectively. The questionnaire was pretested with 30 students. Voluntary completion of the questionnaire indicated informed consent.

### Statistical analysis

Statistical Package for Social Science version 17.0 (SPSS Inc. Released 2008. SPSS Statistics for Windows, Version 17.0. Chicago: SPSS Inc); September 2012; License Number: 1093910, Başkent University) was used for data entry and analysis. Statistical analysis of the data for frequency and percentages were calculated for all responses in the survey; Chi-square test was used to compare variables. Results had 95% confidence interval with  $P < 0.05$ , indicating statistical significance.

### Ethics

The study was performed according to the Helsinki Declaration and was approved by the Başkent University Social and Human Sciences Research Committee. In addition, verbal approval after a detailed explanation on the research was obtained.

## Findings

The average age of the students was  $21 \pm 2.34$  (range: 21-43); majority of them were female (62.4%), and their family's income level were equal to the expenditure (47.5%), 25.2% of them were from health-related schools (faculty of health sciences, medical school, dentistry and vocational health school) [Table 1].

Less than half of the students (37.9%) had knowledge about skin cancer a mostly obtained through the internet (24.5%) and media (24.1%). Most of the responders (77.3%) did not know about screening tests for skin cancer. Those aware of skin self-examination ( $n = 40$ ), only 18 students were practicing [Table 2]. More than half (55.4%) had visited a dermatologist, but the majority (96%) did not receive any test/diagnosis for skin cancer.

Half of them (50.9%) were aware of the risk factors, avoiding direct exposure to the Sun between 10 am and 4 pm (45.3%); smoking and alcohol (38.4%); having fair skin color (34.9%), and UV light exposure (25.7%) [Table 3]. When the number of risk factors was examination based on responses; 21.5% of them had one risk factors, 19.3% of them had two risk factors, 13.4% of them had three or more risk factors. One in 3 of the students (32.9%) stated they knew the sign and symptoms of skin cancer.

They indicated their preventive behaviors mostly as drinking at least 8-10 glass of water/day (32.4%); using sunscreen with an SPF of 15 or higher while on the beach or swimming (22.5%). However, most of them were not wearing a hat (69.3%) and never used a sunscreen with a SPF of 15 when they going out in the Sun or the general (40.6%) [Table 4].

We compared students' knowledge and behaviors regarding skin cancer based on their departments of study by separating the health-related departments than other departments. Students studying in health-related departments demonstrated better knowledge than others. The difference was statistically significant for skin cancer knowledge ( $P = 0.003$ ), knowledge about risk factors and sign/symptoms ( $P = 0.000$ ). However, no statistically significant relationship was found between the two groups regarding self-skin examination ( $P > 0.05$ ).

When we analyzed the relationship between demographic variables and knowledge regarding skin cancer risk factors and Sun protection behaviors was analyzed; no statistically significant differences were found except gender. Female

**Table 1: Students' characteristics**

Characteristics	n (%)
Class/year of study ( $n=404$ ) <sup>a</sup>	
Preparatory	44 (10.9)
1 <sup>st</sup>	88 (21.8)
2 <sup>nd</sup>	139 (34.4)
3 <sup>rd</sup>	89 (22.0)
4 <sup>th</sup>	37 (9.2)
5 <sup>th</sup>	7 (1.7)
The mean age (years)	$21 \pm 2.34$
Gender	
Female	252 (62.4)
Male	152 (37.6)
Their family's income level	
Less to expenditure	29 (7.2)
Equal to expenditure	192 (47.5)
More than expenditure	183 (45.3)
Having a relative who has cancer	
Yes	392 (97.0)
No	12 (3.0)
Degree of relationship	
First-degree relatives	27 (6.7)
Second-degree relatives	107 (26.5)
Friends/neighbors	24 (5.9)

<sup>a</sup>Percentage calculation performed using  $n = 404$

**Table 2: Students' knowledge about skin cancer and practice of self-skin examination**

Item	n (%)
Having to knowledge about skin cancer ( $n=404$ )	
Yes	153 (37.9)
No	251 (62.2)
Sources of information ( $n=270$ ) <sup>a</sup>	
Internet	66 (24.5)
Media	65 (24.1)
Books	51 (18.9)
Health professionals	33 (12.2)
Relatives/friends	30 (11.1)
In courses	25 (9.2)
Knowledge about leading risk factors for skin cancer ( $n=404$ )	
Yes	206 (50.9)
No	198 (49.0)
The status of knowledge about skin cancer screening tests and early diagnosis ( $n=401$ )	
Yes	91 (22.7)
No	310 (77.3)
Knowledge about self-skin examination	
Yes	40 (9.9)
No	58 (14.3)
Self-skin examination practice	
Yes	18 (4.5)
No	22 (5.4)

<sup>a</sup>Multiple responses received

students had more knowledge about skin cancer risk factors than their male counterparts, and the difference was statistically significant ( $P = 0.007$ ).

The majority of students (81.9%) stated interested in prevention and early detection of skin cancer of indicated their encesto receive information was brochure/leaflet (39.1%) and the internet (26.1%).

## Discussion

This study reports only one Turkish university students' awareness about skin cancer, prevention and early detection. Due to increasing skin cancer prevalence (especially among young adults), awareness of modifiable risk factors, implanting necessary preventive measures, and practicing self-skin examination are important.

Results of this study revealed that overall skin cancer knowledge among the university students was low, (risk factors and prevention behaviors) demonstrated. These findings correspond with previous studies in Turkey<sup>[16,17]</sup> that behaviors of university students related to Sun-protection were not sufficient. Skin cancer awareness among university students from Western countries was generally better. A study from Brazil investigated Sun exposure and Sun-protection habits among 368 university

students; reported that photoprotective measures were adopted by most participants and over 90% of the students are aware of the association between UVR and skin cancer.<sup>[20]</sup> A study conducted in the USA with 492 college students showed a majority of participants knew that Sun exposure increases the risk for skin cancer; however, only 29% correctly identified behaviors that reduce this risk.<sup>[21]</sup> Another a study with 270 medical students reported satisfactory knowledge on skin cancer knowledge and prevention.<sup>[22]</sup> In France, Isvy et al.<sup>[23]</sup> surveyed 570 medical students about their knowledge and behaviors concerning Sun risk and its prevention, reported good results for general aspects of Sun risk and preventive measures. Consistent with studies conducted with medical students, this study also showed that students from health-related departments have better understanding risks than the health students. No statistically significant relationship was found among two groups regarding to self-skin examination. Consistent with the other studies<sup>[19,22-24]</sup> females in this study had more knowledge about skin cancer risk factors (56.2%) than their male counterparts (42.1%).

Most of the participants indicated the main sources of information about skin cancer as the internet and media while health professionals and courses during education were listed as the least sources for information. Similarly, previous studies from Turkey<sup>[16,17]</sup> reported the about skin cancer was as TV/media and internet main source of information.

In this current study, students indicated their preventive behaviors mostly as drinking at least 8-10 glass of water/day, using sunscreen with an SPF of 15 or higher while on the beach or swimming and always wearing Sunglasses. However, most of them were not wearing a hat, never used a sunscreen at least with an SPF of 15 when exposed out. In lines with these findings, a previous study from Turkey by Kaymak et al.<sup>[17]</sup> reported that less than half (45.3%) of the participants avoid exposure to Sun at dangerous hours

**Table 3: Existence of the skin cancer risk factors**

Risk factors (n = 404)*	n (%)**
Going out during the hours of 10.00 am to 4.00 pm without Sun-protection	183 (45.3)
Smoking/alcohol use	155 (38.4)
Having fair-skin	141 (34.9)
Exposure to ultraviolet radiation	104 (25.7)
Lots of nevus, freckles, and mole on body	83 (20.5)
Having never tanning skin type	70 (17.3)
Solarium/tanning salons	49 (12.1)
Having light-colored eyes	47 (11.6)
Having red or blonde hair	42 (10.4)
Having Sun burns which are painful and bubbly before 20 age	40 (9.9)
Exposure to petroleum, coal, arsenic	34 (8.4)
Family history of skin cancer	28 (6.9)
Taking immunosuppressive treatment	14 (3.5)
Other (not using sunscreen)	5 (1.2)

\*Multiple responses received, \*\*Percentage calculation performed using n = 404

**Table 4: Student' protective behaviors from ultraviolet radiation**

Protective behaviors*	Always	Often	Sometimes	Rarely	Never
I avoid the Sun during the hours of 10 am to 4 pm	3.5	13.1	27.0	23.8	32.7
When I go out, I wear a hat	0.5	1.7	10.9	17.6	69.3
I wear Sun glasses	18.1	28.7	25.0	12.9	15.3
When I go out, I use a sunscreen at least with an SPF of 15	9.7	11.9	14.6	23.3	40.6
I wear sunscreen at least with an SPF of 15 while at the beach or swimming	22.5	20.8	20.5	18.6	17.6
I don't go to swim	5.4	7.2	18.1	13.1	55.9
I don't take sunbath on the beach	8.7	10.4	16.8	17.3	46.3
I drink water minimum 8-10 glasses	32.4	26.2	21.0	13.1	6.9

\*Percentages. SPF: Skin protection factor

(10.00-16.00), 27.9% used Sun protective agents and 11.2% wearing Sunglasses.

Most of the responders did not know about screening for skin cancer. Those who knew about skin self-examination ( $n = 40$ ), only 18 students were practicing. More than half visited a dermatologist, but the majority did not receive any test or recommendation for skin cancer. In a study from France by Isvy *et al.*,<sup>[23]</sup> reported approximately 60% subjects were performing skin self-examination at least once a year.

## Conclusion

There are several potential limitations of this study. The survey was conducted at one university; thus caution must be taken in extending our findings to other universities, especially universities beyond this geographical region. The study data was based on the sample's self-reporting and cannot be generalized beyond the sample. This study showed a lack of knowledge about skin cancer; prevention and early detection among university students and demonstrated the need for educational interventions to raise awareness in this target group.

## Acknowledgments

The authors would like to thank the students who participated in this study. This study was presented as a poster presentation in EONS 9 Congress, Istanbul/Turkey, 18-19 September 2014.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## References

- Siegel R, Ma J, Zou Z, Jemal A. Cancer statistics, 2014. *CA Cancer J Clin* 2014;64:9-29.
- TC. Public Health Agency of Turkey Ministry of Health. Turkey Cancer Statistics. 2014. Available from: [http://www.kanser.gov.tr/Dosya/ca\\_istatistik/2009kanseraporu-1.pdf](http://www.kanser.gov.tr/Dosya/ca_istatistik/2009kanseraporu-1.pdf). [Last cited on 2015 Sep 30].
- Eide MJ, Weinstock MA. Public health challenges in Sun protection. *Dermatol Clin* 2006;24:119-24.
- Alexander RL. Skin cancer: Causes and groups at risk. *Nurs Times* 2012;108:23-5.
- Freak J. Promoting knowledge and awareness of skin cancer. *Nurs Stand* 2004;18:45-53.
- Edwards M. Sun awareness and prevention of skin cancer. *Prim Health Care* 2007;17:21-4.
- Kamell JM, Rietkerk W, Lam K, Phillips JM, Wu JJ, McCullough JL, *et al.* Medical students educate teens about skin cancer: What have we learned? *J Cancer Educ* 2011;26:153-5.
- Glanz K, McCarty F, Nehl EJ, O'Riordan DL, Gies P, Bundy L, *et al.* Validity of self-reported sunscreen use by parents, children, and lifeguards. *Am J Prev Med* 2009;36:63-9.
- Hamidi R, Peng D, Cockburn M. Efficacy of skin self-examination for the early detection of melanoma. *Int J Dermatol* 2010;49:126-34.
- Smith RA, Cokkinides V, Eyre HJ; American Cancer Society. American Cancer Society guidelines for the early detection of cancer, 2003. *CA Cancer J Clin* 2003;53:27-43.
- Choudhury K, Volkmer B, Greinert R, Christophers E, Breitbart EW. Effectiveness of skin cancer screening programmes. *Br J Dermatol* 2012;167 (Suppl 2):94-8.
- Walker DK. Skin protection for (SPF) kids program. *J Pediatr Nurs* 2012;27:233-42.
- Janda M, Youl P, Marshall AL, Soyer HP, Baade P. The HealthyTexts study: A randomized controlled trial to improve skin cancer prevention behaviors among young people. *Contemp Clin Trials* 2013;35:159-67.
- Balyaci OE, Kostu N, Temel AB. Training program to raise consciousness among adolescents for protection against skin cancer through performance of skin self examination. *Asian Pac J Cancer Prev* 2012;13:5011-7.
- Ergul S, Ozeren E. Sun protection behavior and individual risk factors of Turkish Primary School Students associated with skin cancer: A questionnaire-based study. *Asian Pac J Cancer Prev* 2011;12:765-70.
- Yurtseven E, Ulus T, Vehid S, Köksal S, Bosat M, Akkoyun K. Assessment of knowledge, behaviour and Sun protection practices among health services vocational school students. *Int J Environ Res Public Health* 2012;9:2378-85.
- Kaymak Y, Tekbaş ÖF, Şimşek I. Knowledge, Attitudes and behaviours of university students related to Sun protection. *Turkderm* 2007;41:81-5.
- Gillespie HS, Watson T, Emery JD, Lee AJ, Murchie P. A questionnaire to measure melanoma risk, knowledge and protective behaviour: Assessing content validity in a convenience sample of Scots and Australians. *BMC Med Res Methodol* 2011;11:123.
- Hobbs C, Nahar VK, Ford MA, Bass MA, Brodell RT. Skin cancer knowledge, attitudes, and behaviors in collegiate athletes. *J Skin Cancer* 2014;2014:248198.
- Castilho IG, Sousa MA, Leite RM. Photoexposure and risk factors for skin cancer: An evaluation of behaviors and knowledge among university students. *An Bras Dermatol* 2010;85:173-8.
- Spradlin K, Bass M, Hyman W, Keathley R. Skin cancer: Knowledge, behaviors, and attitudes of college students. *South Med J* 2010;103:999-1003.
- Patel SS, Nijhawan RI, Stechschulte S, Parnet Y, Rouhani P, Kirsner RS, *et al.* Skin cancer awareness, attitude, and Sun protection behavior among medical students at the University of Miami Miller School of Medicine. *Arch Dermatol* 2010;146:797-800.
- Isvy A, Beauchet A, Saiag P, Mahé E. Medical students and Sun prevention: Knowledge and behaviours in France. *J Eur Acad Dermatol Venereol* 2013;27:e247-51.
- Cottrell R, McClamroch L, Bernard AL. Melanoma knowledge and Sun protection among college students by gender and skin type. *Am J Health Educ* 2005;36:274-8.