

## KNOWLEDGE, ATTITUDES AND BEHAVIORS CONCERNING SUN PROTECTION/SKIN CANCER AMONG ADULTS IN TURKEY

Nursan Dede Cinar<sup>1</sup>, Sezgi Cinar<sup>2</sup>, Ayse Karakoc<sup>3</sup>, Fatma Ucar<sup>4</sup>

### ABSTRACT

**Objective:** To document the level of knowledge, attitudes and behaviors of adults concerning sun protection and skin cancer.

**Methodology:** This was designed as descriptive and correlational study. The study group comprised of 1020 adults aged 18 to 75, chosen from all seven geographical regions in Turkey.

**Results:** Participants living in East and Southeast Anatolia regions had statistically less knowledge concerning sun protection and skin cancer. The knowledge scores of women were higher than men. The knowledge scores of those in younger age group, students and university graduates were higher than others. Women were sunbathing more often than men to have a darker skin and also were taking more protective measures against skin cancer.

**Conclusion:** Education level, gender and living in a coastal region effect level of knowledge, attitude and behavior about sun protection/skin cancer.

**KEY WORDS:** Skin Neoplasm, Knowledge, Attitude, Behavior.

Pak J Med Sci January - March 2009 Vol. 25 No. 1 108-112

### How to cite this article:

Cinar ND, Cinar S, Karakoc A, Ucar F. Knowledge, attitudes and behaviors concerning sun protection/skin cancer among adults in Turkey. Pak J Med Sci 2009;25(1):108-112.

1. Nursan Dede Cinar, PhD,  
Assistant Professor,
2. Sezgi Cinar, PhD,  
Assistant Professor
3. Ayse Karakoc, PhD,
- 2,3: Marmara University,  
Faculty of Health Science,  
School of Midwifery, Istanbul.
4. Fatma Ucar, Msc.,
- 1,4: Sakarya University,  
Vocational School of Health,  
Sakarya - Turkey.

### Correspondence

Sezgi Cinar,  
Marmara University,  
Faculty of Health Science, School of Nursing,  
Tibbiye cad. Haydarpasa, 34704,  
Istanbul, Turkey.  
E-mail: sezginar@hotmail.com  
scinar@marmara.edu.tr

- \* Received for Publication: September 17, 2008
- \* Revision Received: September 23, 2008
- \* Revision Accepted: December 23, 2008

## INTRODUCTION

Skin cancers are the most common type of malignancies seen in the United States. It was estimated in 2004 that more than one million people would be newly diagnosed as having basal cell or squamous cell carcinomas.<sup>1,2</sup> The incidence of malignant melanoma, the most dangerous form of skin cancer has increased rapidly in Sweden and other Western Countries during the last three decades.<sup>3</sup> In Turkey, 5-7% of all reported malignancies were skin cancers in 1999. Nine thousand nine hundred nineteen cancer cases were diagnosed in women, 684 of them were skin cancer and the incidence was 2.1 per hundred thousand. On the other hand, 16023 cancer cases were diagnosed among men, and 804 of them were skin cancers, the incidence being 48.3 per hundred thousand.<sup>4</sup> In 372 patients, (231 male and

141 female) a total of 386 skin cancer were diagnosed.<sup>5</sup>

As the exposure to ultraviolet radiation (UVR) from the sun is the most important known risk factor for skin cancer, increasing sun protective behaviors and decreasing excessive sunbathing among general population may reduce the incidence of skin cancer.<sup>6-9</sup> The World Health Organization recommends sun protective behaviors such as wearing protecting clothes, staying in the shade, avoiding the sun during midday and using a sun screen.<sup>2</sup> In some studies, the importance of social education and getting positive behavioral changes were underlined to protect people from the health damaging effects of the excessive exposure to sunlight.<sup>8-12</sup> Nearly, all skin cancers are preventable, as the great majority of them are attributed to sun exposure. Therefore, the application of sun protective strategies may reduce the incidence of skin cancer and malignant melanoma.<sup>11-13</sup> Regular voluntary sunscreen use for skin cancer prevention can be sustained by sun-sensitive people in the long term.<sup>14,15</sup>

Some studies show that women were more informed compared with men about sun protection,<sup>3</sup> and women were taking more protective measures for sun protection than men.<sup>2,16</sup> Sunlight is a great risk factor for the formation of skin cancer; it is advisable to educate adults about the preventive measures and the importance of early diagnosis.<sup>17</sup> Older people ignored risk factors for skin cancer and melanoma frequently.<sup>11,18</sup>

The aim of the present study was to document the level of knowledge, attitudes and behaviors of adults concerning sun protection and skin cancer, and to compare differences according to age, gender, education level and geographical regions in Turkey.

## METHODOLOGY

This descriptive and correlational study was carried out between April and December 2004. At first, a random city was selected from each of seven geographical regions of Turkey. The sample was estimated by selecting 5 adults per

100,000 adults from each city. Then, a random sample of 1020 adults aged 18-75 years were selected from heavily populated areas or crowded places such as shopping centers, bus terminals and schools.

Participants were given information about the objectives of the study and an informed verbal consent was obtained. The questionnaire form was prepared by the investigator and was based on scientific literature. It had three sections:

1. Socio-demographic data and habits (16 questions).
2. Assessment of knowledge on harmful effects of sunlight, skin cancer and protection from them (15 items). Fifteen items assessed knowledge towards sun exposure using true/false and multiple-choice items over a total of 15 points. Knowledge scores were dichotomized by distributing the study population into low score (0-10) and high score (11-15) groups.
3. Assessment of attitudes and behaviors on harmful effects of sunlight, skin cancer/ protection from them (8 items). Eight items assessed attitudes & behaviors on harmful effects of sunlight, skin cancer and protection from them using always, seldom and never.

The internal validity of the questionnaire was assessed and a Cronbach's alpha value of 0.70 and Kuder Richardson 21 value of 0.66 were found. Then, data was analyzed through SPSS/12 software with non-parametric tests.

## RESULTS

All of the 1020 participants (53.4% women and 47.6% men) answered, and were included into the statistical analysis. Relationships between knowledge level of the participants concerning the sun protection/ skin cancer and age, gender, educational status are shown in Table-I. Participants living in East and South-east Anatolia regions had statistically less knowledge concerning sun protection and skin cancer than participants living in other five regions (Table-II).

There were no significant differences between women and men according to

Table-I: Relationships between knowledge level of the participants concerning the sun protection/ skin cancer and sociodemographic variable (n=1020)

	Low score (<10)		High score (>11)		Level of knowledge		Chi-square and p values	
	n	%	n	%	n	%		
<i>Age</i>								
<19	50	23.9	184	22.7	234	22.9		
20-29	74	35.4	387	47.7	461	45.2		
30-39	40	19.1	128	15.8	168	16.5	13.26	0.010*
40-49	29	13.9	73	9.0	102	10.0		
>50	16	7.7	39	4.8	55	5.4		
<i>Gender</i>								
Women	90	43.1	455	56.1	545	53.4	11.36	0.001**
Men	119	56.9	356	43.9	475	46.6		
<i>Education</i>								
Elementary	41	19.6	72	8.9	113	11.1		
Middle school	41	19.6	73	9.0	114	11.2	59.17	0.000***
High school	69	33.0	228	28.1	297	29.1		
University	53	25.4	390	48.1	443	43.4		
Master	5	2.4	48	5.9	53	5.2		

\*p<0.05, \*\*p<0.01, \*\*\* p<0.001

sunbath on the seaside (chi-square=2.928, p>0.05). Women (68.8%) were using a wide-brimmed hat more often than men (31.1%), (chi-square=5.926, p<0.05). More men (56.8%) had experienced sunburn than women (43.2%), (chi-square=14.208, p<0.01). Moreover, men were more often outside during the middle of the day (chi-square=22.416, p<0.001). There were no significant differences between women and men according to experiencing sunstroke (chi-square=0.303, p>0.05). Women were sunbathing more often than men to have a darker skin (chi-square=10.573, p<0.01) and also were taking more protective measures against skin cancer (chi-square=10.061, p<0.01).

The younger the age the more people had sunburn (chi-square=15.513, p<0.05). Also, younger people were using a protective hat less frequently (chi-square=51.156, p<0.001). There were statistical differences among age groups according to staying outside at noontimes (chi-square=20.152, p<0.01). 45.8% of the people aged 20-29 were outside during noontimes. There were no significant differences among age groups for taking protective measures

against skin cancer (chi-square=12.949, p>0.05).

There were no significant differences between men and women for having had sunburn before, experiencing sunstroke and taking protective measures against skin cancer (chi-square=2.128, p>0.05; chi-square=0.960, p>0.05; chi-square=5.667, p>0.05, respectively).

Significant differences were found among different education groups in taking protective measures while going outdoor or trying to limit time spent at outdoor at midday to avoid skin cancer (chi-square=32.185, p<0.001); university graduates were the most careful group (44.2%) On the other hand, there were no significant differences among different education groups in having had sun burn and heat stroke before (chi-square=10.889, p>0.05; chi-square=11.530, p>0.05).

## DISCUSSION

In the present study, women had statistically more knowledge concerning sun protection and skin cancer than men. Kristjansson et al.,<sup>3</sup> found that women were more informed com-

Table-II: Relationships between knowledge level of the participants concerning the sun protection/ skin cancer and geographical regions (n=1020)

Geographical regions	Low score (<10)		High score (>11)		Level of knowledge		Chi-square and p values
	n	%	n	%	n	%	
Marmara	66	31.6	356	43.9	422	4.4	165.55 0.000***
Argean	27	12.9	187	23.1	214	21.0	
Black Sea	33	15.8	106	13.1	139	13.6	
Middle Anatolia	2	1.0	21	2.6	23	2.3	
East Anatolia	14	6.7	37	4.6	51	5.0	
Southeast Anatolia	59	28.2	21	2.6	80	7.8	
Mediterranean	8	3.8	83	10.2	91	8.9	

\*\*\* p&lt;0.001

pared with men about sun protection, also adults compared with adolescents. Our results are in agreement with this finding. Additionally, we found that university graduates had more knowledge about sun protection than lesser educated people. People living in coastal regions had more knowledge about the sunlight's harmful effects and protection methods compared with people from inner regions. This was more or less expected and it may be due to differences in socioeconomic status as well as the climatic factors and differences in outdoor working and recreational habits.

We found that women were taking more protective measures for sun protection than men. This was in correlation with women's higher level of knowledge and in agreement with other studies, namely Kristjansson et al.,<sup>3</sup> and Cokkinides et al.<sup>16</sup> On the other hand, Campel et al.,<sup>17</sup> found that less than 50% of women and men were taking protective measures against sunlight. There were some differences

in the nature of the selected protective measures between men and women. Ermertcan et al., (2005)<sup>15</sup> found that avoiding sun exposure during peak hours was the most popular preventive behavior for men, wearing sunglasses was the most popular one for women. In general, wearing protective clothing, sunglasses and using sunscreen were found to be significantly higher in women than in men.

We found that in the domain of attitudes and behaviors against sunlight's harmful effects, people younger than 29 years were found to use sun protective hats less often. On the other hand, 20-29 age groups were using sunscreens more often, going outside at midday less often, had experienced less sun burn and taking more protective measures to protect themselves against skin cancer than other age groups. Kristjansson et al.,<sup>3</sup> reported the ratio of using sun protective clothes as 39% in the 13-19 year age group and 60% in the >60 year age group. On the contrary, Baron-Epel and Azizi<sup>13</sup> found

Table-III: Pervallence of frequency of individual attitudes and behaviors concerning the sun protection/ skin cancer (n=1020)

Attitude and behavior	Always		Seldom		Never	
	n	%	n	%	n	%
Sunbating at seaside	276	27.1	480	47.1	264	25.9
Using protective hat under sun	184	18.0	316	31.0	520	51.0
Using sunscreens under sun	256	25.1	331	32.5	433	42.5
Having had sunburn before	81	7.9	393	38.5	546	53.5
Having had heat stroke before	25	2.5	197	19.3	798	78.2
Going outdoor at midday hours	179	17.5	547	53.6	294	28.8
Sunbathing to get a suntan	182	17.8	266	26.1	572	56.1
Taking protective measures for the protection against skin cancer	239	23.4	276	27.1	505	49.5

that people 45 years and older were less insistent in taking protective measures against sunlight. Moreover, Cokkinides et al.,<sup>16</sup> found that those 46 years and older group was using sunscreens less frequently than younger age groups.

We found that most of the students had sunbath to get a suntan. This is in agreement with the results of Filiz et al.,<sup>18</sup> A positive correlation was found between education level and knowledge, attitudes and behaviors for the protection against health damaging effects of sunlight; more educated people were more sensitive and conscious about health protection. These results are in agreement with other studies in the literature.<sup>3,19</sup>

## CONCLUSIONS

People's level of knowledge, attitude and behaviors are influenced by several factors including age, gender and educational status and living in a coastal region. These factors should be kept in mind when designing intervention programs concerning sun protection/skin cancer. It should be emphasized that sunscreen use may be a questionable method to prevent skin cancer and these should only be used as complementary to other sun protection strategies. There is clearly a need for changing public's beliefs and protective behaviors; deeper understanding of the age and education specific preferences as well as the regional ones will help in planning future research and health education programs.

## ACKNOWLEDGEMENT

The authors are most grateful to Halim Ýssever in statistical analysis and Alp Aker in translation. We are also grateful to the participants of this study for agreeing to participate.

## REFERENCES

1. Marks R, Whiteman D. Sunburn and melanoma: How strong is the evidence? *BMJ* 1994;308:75-6.
2. Saraiya M, Glanz K, Briss PA, Nichols P, White C, Das D. Interventions to prevent skin cancer by reducing exposure to ultraviolet radiation. *Am J Prev Med* 2004;27(5):422-9.
3. Kristjansson S, Ullen H, Helgason AR. The importance of assessing the readiness to change sun-protection behaviors: a population-based study. *European J Cancer* 2004;40(18):2773-80.
4. Türkiye Cumhuriyeti Sađlık Bakanlıđı, Sađlık Ýstatistikleri 2001;649:92-5.
5. Aktürk A, Yıldıız KD, Bilen N, Bayramgürler D, Kýran R 6 Onyedi M. Kocaeli Üniversitesi Týp Fakóltesi 1996-2003 yılları arasında başvuran deri kanseri olguları. *Türkiye Klinikleri J Dermatolog* 2006;16(2):44-9.
6. Armstrong BK, Kricker A. The epidemiology UV skin cancer. *J Photochem Photobiol B* 2001;63(1-3):8-18.
7. Bastuji-Garin STD, Diepgenn TL. Cutaneous malignant melanoma, sun exposure, and sunscreen use: Epidemiological evidence. *Br J Dermatol* 2002;149(61):24-30.
8. Purdve PM, Marrett LD, Peters L, Rivers JK. Predictors of sunburn among Canadian adults *Preventive Medicine* 2001;13(4):305-12.
9. Hall HI, May DS, Lew RA, Koh HK, Nadel M. Sun protection behaviors of the U.S: white population. *Preventive Medicine* 1997;26(4):401-7.
10. Pagota S, McChargue D, Fuqua RW. Effects of a multicomponent intervention on motivation and sun protection behaviors among Midwestern beachgoers. *Health Psychology* 2003;22(4):429-33.
11. Koh HK, Geller AC. Skin cancer prevention comes of age. *Am J Prev Med* 2004;27(5):484-5.
12. Hill D. Skin cancer prevention. *Am J Prev Med* 2004;27(5):482-3.
13. Baron-Epel O, Azizi E. The association between counseling, sun protection, and early detection of skin cancer in middle-aged Israelis. *Cancer Detection and Prevention* 2003;27:338-44.
14. Clavarino A, Green AC. Long-term increase in sunscreen use in an Australian community after a skin cancer prevention trial. *Preventive Medicine* 2006;42(3):171-6.
15. Ermertcan AT, Oztürkcan S, Diñ G, Yurtman D, Pala T, Sahin MT. Sunscreen use and sun protection practices in students and personel of Celal Bayar University. *Photo dermatology, Photoimmunology & Photomedicine* 2005;21(4):191-7.
16. Cokkinides VE, Weinstock MA, Cardinez CJ, O'Connell BA. Sun-safe practices in U.S. youth and their parents' role of caregiver on youth sunscreen use. *Am J Prev Med* 2004;26(2):147-51.
17. Campbell HS, Birdsall JM. Knowledge, beliefs, and sun protection behaviors of Alberta adults. *Preventive Medicine* 1994;23(2):160-6.
18. Filiz MT, Cinar DN, Topsever P, Uçar F. Tanning youth: Knowledge behaviors and attitudes towards sun protection of high school students in Sakarya-Turkey. *J Adolescent Health* 2006;38:469-71.
19. Canto MT, Drury TF, Horowitz AM. Use of skin and oral cancer examinations in the United States, 1998. *Preventive Medicine* 2003;37:278-82.