

Investigation of Information, Attitudes and Behaviors About Sunglasses and Ultraviolet Light Protection Sunglasses Wearing Behavior

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Abstract

Objective: The aim of the study is to determine the sunglasses-wearing habits, the level of knowledge about the purpose of wearing sunglasses and the awareness of the effects of sunlight on ocular tissues among patients attending the outpatient clinic.

Methods: Between January and March 2023, a questionnaire was administered to people who visited the ophthalmology clinic at the Elbistan State Hospital. 250 people who volunteered to participate in the survey were included in this cross-sectional study. The questionnaire consisted of 10 questions.

Results: The mean age of the 250 participants (56% female and 44% male) was 41.94±15.31 years. 90.5% of the villagers, all the illiterate participants and 54.1% of the unemployed participants stated not to know about UV. 82.9% of the university graduates and 80% of the office workers reported knowing about UV. Illiterate participants reported buying sunglasses based on brand and price; most university graduates reported buying sunglasses based on UV protection. When asked about the purpose of wearing sunglasses, most men reported it was to prevent glare, while most women reported it was for aesthetic and cosmetic reasons. 90.5% of villagers and 83.8% of illiterates reported wearing sunglasses for aesthetic and cosmetic reasons. 84.2% of university graduates reported that it was used to protect the eye tissues from the harmful rays of the sun.

Conclusion: The study highlights the lack of awareness of sunlight in society and the general lack of sun protection, suggesting the need for health education programs. Informative public service announcements and videos on the topic have been suggested.

Key Words: Sunglasses, sun rays, ultraviolet

Ultraviyole Işınlardan Korunma ve Güneş Gözlüğü ile İlgili Bilgi, Tutum ve Davranışların İncelenmesi

Özet

Amaç: Bu çalışmanın amacı, polikliniğe başvuran hastaların güneş gözlüğü kullanma alışkanlıklarını, güneş gözlüğü kullanma amacına ilişkin bilgi düzeylerini ve güneş ışığının oküler dokular üzerindeki etkileri konusundaki farkındalıklarını belirlemektir.

Yöntemler: Ocak-Mart 2023 tarihleri arasında Elbistan Devlet Hastanesi göz polikliniğine başvuran kişilere anket uygulandı. Bu kesitsel çalışmaya ankete katılmaya gönüllü olan 250 kişi dahil edilmiştir. Anket 10 sorudan oluşmaktadır.

Bulgular: 250 katılımcının (%56'sı kadın ve %44'ü erkek) yaş ortalaması 41,94 ± 15,31 idi. Köyde kalanların %90,5'i, okuma yazma bilmeyenlerin tamamı ve çalışmayanların %54,1'i ultraviyole hakkında bilgilerinin olmadığını belirtmiştir. Üniversite mezunlarının %82,9'u ve memurların ise %80'i UV hakkında bilgi sahibi olduklarını bildirdi. Okuma yazma bilmeyen katılımcılar, marka ve fiyata göre güneş gözlüğü satın aldıklarını; üniversite mezunlarının çoğu güneş gözlüklerini ultraviyole koruyucu özellikleri nedeniyle satın aldıklarını bildirdi. Güneş gözlüğü takmanın amacı sorulduğunda, erkeklerin çoğu parlamayı önlemek için taktıklarını söylerken, kadınların çoğu ise estetik ve kozmetik nedenlerle taktıklarını bildirdi. Köyde yaşayanların %90,5'i ve okuma yazma bilmeyenlerin %83,8'i estetik ve kozmetik nedenlerle güneş gözlüğü taktıklarını bildirdi. Üniversite mezunlarının %84,2'si oküler dokularını güneşin zararlı ışınlarından korumak için kullanıldığını bildirmiştir.

Sonuç: Toplumdaki güneş ışığı farkındalığının eksikliğini ve genel olarak güneş gözlüğü ile güneş ışınlarından korunma eksikliğini vurgulanmıştır. Çalışma sonucu sağlık eğitimi programlarına ihtiyaç olduğunu düşündürmektedir. Konuyla ilgili toplumu bilgilendirici kamu spotları ve videolar önerilmektedir.

Anahtar Kelimeler: Güneş gözlüğü, güneş ışınları, ultraviyole

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INTRODUCTION

Many studies have reported that exposure to low doses of UV, especially UVB, is a risk factor for the development of many ocular diseases. These include cataracts, pinguecula, pterygium, squamous cell carcinoma of the cornea and conjunctiva (1-3). Evidence shows a strong correlation between UVR exposure and skin and eye diseases (3,4). Neale et al. found an association between exposure to sunlight at younger ages and nuclear cataracts in adult life (5,6).

To protect the eyes and surrounding tissues from the harmful effects of the sun, some measures can be taken, such as staying outdoors under an umbrella or in the shade, wearing a wide-brimmed hat, using UV-protective sunglasses to protect the eyes, avoiding being outdoors between 10:00 and 16:00 when the sun is strong and using regular sunscreen (7). This study was conducted to assess the relationship between people's socio-demographic characteristics and whether they wear sunglasses, people's opinions about why they wear

sunglasses, what they look for when buying sunglasses and UV information.

Table 1: Survey of knowledge, attitudes and behaviours towards sunglasses use among patients attending the outpatient clinic

1. Your name and surname:	
2. Your age:	
3. Your gender:	
4. Where do you live?	
	a) City centre, district centre b) Village
5) What is your level of education?	
	a) Illiterate b) Primary school c) Secondary school - high school d) University
6) What is your occupation?	
	a) Unemployed b) Student c) Retired, self-employed d) Officer
7) Do you wear sunglasses?	
	a) Yes b) No
8) Why do you think people wear sunglasses?	
	a) To prevent the sun's rays from dazzling the eyes b) To protect the eye tissues from the sun's harmful rays c) For aesthetic/cosmetic reasons
9) What do you look for when buying sunglasses?	
	a) Brand and price b) Level of protection from ultraviolet rays
10) Do you know anything about the harmful rays of the sun - the UV rays?	
	a) I do not know anything about it b) I know that the sun's rays are harmful to the skin, but I do not think they are harmful to the eyes. c) I know that some of the sun's rays are harmful to the eyes.

METHODS

Patients who applied to the Elbistan State Hospital Ophthalmology Clinic between January and March 2023 and volunteered to participate in the survey were included in this cross-sectional survey study. The study was conducted according to the tenets of the Helsinki

Declaration and was approved by the ethical committee of Kahramanmaraş Sütçüimam University's Medical Faculty (Number: 2022/23-88/06). Verbal and written consent was obtained from all patients who participated in the study. The study was conducted in accordance with the Declaration of Helsinki. To ensure privacy and confidentiality, participants' personal information was protected. A 9-question questionnaire was prepared and administered to the patients (Table 1). It takes approximately 5 minutes to complete the survey. All questionnaires were administered by the doctor in a face-to-face interview with the patients. The questionnaire was designed to assess the knowledge, attitudes and behaviors of people attending the ophthalmic polyclinic regarding the use of sunglasses. First, questions 1-6 were designed to determine the socio-demographic characteristics of the people. The next 7-10 questions asked whether they used sunglasses, why they thought sunglasses were used in society, what they looked for when buying sunglasses and finally whether they had any knowledge about the sun's harmful UV rays.

Statistical Analysis

The relationship between people's socio-demographic characteristics and whether they wear spectacles, what they think people wear sunglasses for, what they look for when buying spectacles and their knowledge of UV were assessed. Cross-tables were created for related

variables and their joint distribution was examined. SPSS 17.0 package program was used for statistical analysis. Descriptive statistics of the study include frequency and percentage for categorical variables, mean and standard deviation for continuous variables. The relationship between categorical variables (independence) was assessed using Chi-square analysis. The significance level of the relationship between the results obtained was accepted as $p < 0.05$.

RESULTS

The mean age of the participants was 41.94 ± 15.31 years. The age range of the participants was 18 - 80 years. The frequency distribution of categorical variables is presented in Table 2.

Looking at the other variables of sunglasses-wearing; 79.7% of those under the age of 45, 67.1% of women, 64.2% of people living in the city/district center and 97.4% of university graduates reported that they wear sunglasses. 81% of villagers, 94.6% of illiterates and 63.4% of those aged over 45 reported that they did not wear sunglasses. The relationship between sunglasses wearing and age, place of living, education level and occupation was found to be statistically significant ($p < 0.05$) (Table 3).

While 48.6% of people under the age of 45 believed that sunglasses are used to protect the eye tissue from the harmful rays of the sun, 40.9% of men believed that sunglasses are used

to prevent dazzle, 54.5% of people over the age of 45, 46.4% of women, 90.5% of people living in villages, 83.8% of illiterate people, 56.8% of unemployed people stated that they believed that sunglasses are worn for aesthetic and cosmetic reasons. 84.2% of university graduates and 86%

of officials stated that they were worn to protect their eye tissues from the sun's harmful rays. Statistically significant ($p < 0.05$) changes were observed in the wearing of sunglasses according to age, gender, educational status and occupational groups (Table 4).

Table 2. Frequency distribution of categorical variables

Variable	Category	Number	Percentage
Age	Under 45 years old	138	55,2
	Over 45 years old	112	44,8
Gender	Male	110	44,0
	Female	140	56,0
Living place	City centre / District	229	91,6
	Village	21	8,4
Education	Illiterate	37	14,8
	Primary school	48	19,2
	Middle school / High school	89	35,6
	University	76	30,4
Occupation	Unemployed	111	44,4
	Student	27	10,8
	Retired / Self-employed	62	24,8
	Officer	50	20,0
Do you wear sunglasses?	Yes	151	60,4
	No	99	39,6
What do you think the sunglasses are used for?	To prevent dazzling from sunlight	79	31,6
	To protect the tissues of the eye from the harmful rays of the sun	76	30,4
	For aesthetic and cosmetic reasons	95	38,0
What do you look for when buying sunglasses?	Brand and price	194	77,6
	Level of protection against UV rays	56	22,4
What do you know about the sun's harmful UV rays?	I am not knowledgeable about this.	128	51,2
	I know that the sun's rays are harmful to the skin, but I do not think they are harmful to the eyes.	56	22,4
	I know that some rays of the sun are harmful to the eyes.	66	26,4

Table 3. Relationship of eyewear use with other variables (Chi-square analysis findings)

		Do you wear sunglasses?			p value	
		Yes	No	Total		
Age	Under 45 years old	N %	110 79,7%	28 20,3%	138 100,0%	0,000
	Over 45 years old	N %	41 36,6%	71 63,4%	112 100,0%	
	Total	N %	151 60,4%	99 39,6%	250 100,0%	
Gender	Male	N %	57 51,8%	53 48,2%	110 100,0%	0,014
	Female	N %	94 67,1%	46 32,9%	140 100,0%	
	Total	N %	151 60,4%	99 39,6%	250 100,0%	
Living Place	City centre/District	N %	147 64,2%	82 35,8%	229 100,0%	0,000
	Village	N %	4 19,0%	17 81,0%	21 100,0%	
	Total	N %	151 60,4%	99 39,6%	250 100,0%	
Education	Illiterate	N %	2 5,4%	35 94,6%	37 100,0%	0,000
	Primary school	N %	23 47,9%	25 52,1%	48 100,0%	
	Middle school / High school	N %	52 58,4%	37 41,6%	89 100,0%	
	University	N %	74 97,4%	2 2,6%	76 100,0%	
	Total	N %	151 60,4%	99 39,6%	250 100,0%	
Occupation	Unemployed	N %	58 52,3%	53 47,7%	111 100,0%	0,000
	Student	N %	25 92,6%	2 7,4%	27 100,0%	
	Retired / Self-employed	N %	19 30,6%	43 69,4%	62 100,0%	
	Officer	N %	49 98,0%	1 2,0%	50 100,0%	
	Total	N %	151 60,4%	99 39,6%	250 100,0%	

Looking at the distribution of sunglasses purchase criteria (Table 5), 94.6% of participants over 45, 78.2% of males, 77.1% of females, 76% of those living in the city/district center, 95.2% of those living in villages, all illiterate participants and 88.3% of the unemployed reported that brand and price were the most important criteria when buying sunglasses.

However, 68.4% of university graduates and 60% of officials said they would look for the level of UV protection when buying sunglasses. It was found that there was an association between education level, occupation, age and place of living and what is considered when buying sunglasses ($p < 0.05$).

Table 4. The relationship between the purpose of use of sunglasses and other variables (results of the chi-square analysis)

		What do you think the sunglasses are used for?					p value
		to prevent dazzling from sunlight	to protect the eye tissues from the sun's harmful rays.	for aesthetic and cosmetic reasons	Total		
Age	Under 45 years old	N	37	67	34	138	0,000
		%	26,8%	48,6%	24,6%	100,0%	
	Over 45 years old	N	42	9	61	112	
		%	37,5%	8,0%	54,5%	100,0%	
	Total	N	79	76	95	250	
		%	31,6%	30,4%	38,0%	100,0%	
Gender	Male	N	45	35	30	110	0,003
		%	40,9%	31,8%	27,3%	100,0%	
	Female	N	34	41	65	140	
		%	24,3%	29,3%	46,4%	100,0%	
	Total	N	79	76	95	250	
		%	31,6%	30,4%	38,0%	100,0%	
Living Place	City centre/District	N	78	75	76	229	0,000
		%	34,1%	32,8%	33,2%	100,0%	
	Village	N	1	1	19	21	
		%	4,8%	4,8%	90,5%	100,0%	
	Total	N	79	76	95	250	
		%	31,6%	30,4%	38,0%	100,0%	
Education	Illiterate	N	5	1	31	37	0,000
		%	13,5%	2,7%	83,8%	100,0%	
	Primary school	N	19	0	29	48	
		%	39,6%	0,0%	60,4%	100,0%	
	Middle school / High school	N	47	11	31	89	
		%	52,8%	12,4%	34,8%	100,0%	
University	N	8	64	4	76		
	%	10,5%	84,2%	5,3%	100,0%		
	Total	N	79	76	95	250	
		%	31,6%	30,4%	38,0%	100,0%	
Occupation	Unemployed	N	33	15	63	111	0,000
		%	29,7%	13,5%	56,8%	100,0%	
	Student	N	9	13	5	27	
		%	33,3%	48,1%	18,5%	100,0%	
	Retired / Self-employed	N	32	5	25	62	
		%	51,6%	8,1%	40,3%	100,0%	
	Officer	N	5	43	2	50,0	
	%	10,0%	86,0%	4,0%	100,0%		
	Total	N	79	76	95	250	
		%	31,6%	30,4%	38,0%	100,0%	

The relationship between society's level of UV knowledge and other categorical variables and the p-values for chi-square analysis are shown in Table 6. 76.8% of people over the age of 45 said they had no information about UV rays. The relationship between age and the level of UV knowledge was found to be statistically

significant ($p < 0.05$). Looking at the level of knowledge about UV by gender, 54% of those who have no knowledge are men and 46% are women. In the study based on place of residence, 90.5% of the participants living in the village stated that they did not know about UV. Looking at the level of UV knowledge by education level,

all illiterate participants reported having no knowledge of the subject. 82.9% of graduates answered, "I know that the sun's rays are harmful

to the eyes". It was observed that 80% of officials selected the option "I know that the sun's rays are harmful to the eyes" (Table 6).

Table 5. Relationship between factors to consider when buying sunglasses and other variables

			What do you look for when buying sunglasses?		Total	P value
			Brand and price	Level of protection against UV rays		
Age	Under 45 years old	N	88	50	138	0,000
		%	63,8%	36,2%	100,0%	
	Over 45 years old	N	106	6	112	
		%	94,6%	5,4%	100,0%	
	Total	N	194	56	250	
		%	77,6%	22,4%	100,0%	
Gender	Male	N	86	24	110	0,845
		%	78,2%	21,8%	100,0%	
	Female	N	108	32	140	
		%	77,1%	22,9%	100,0%	
	Total	N	194	56	250	
		%	77,6%	22,4%	100,0%	
Living Place	City centre/ District	N	174	55	229	0,029
		%	76,0%	24,0%	100,0%	
	Village	N	20	1	21	
		%	95,2%	4,8%	100,0%	
	Total	N	194	56	250	
		%	77,6%	22,4%	100,0%	
Education	Illiterate	N	37	0	37	0,000
		%	100,0%	0,00%	100,0%	
	Primary school	N	48	0	48	
		%	100,0%	0,00%	100,0%	
	Middle school / High school	N	85	4	89	
		%	95,5%	4,5%	100,0%	
	University	N	24	52	76	
		%	31,6%	68,4%	100,0%	
	Total	N	194	56	250	
		%	77,6%	22,4%	100,0%	
Occupation	Unemployed	N	98	13	111	0,000
		%	88,3%	11,7%	100,0%	
	Student	N	16	11	27	
		%	59,3%	40,7%	100,0%	
	Retired / Self-employed	N	60	2	62	
		%	96,8%	3,2%	100,0%	
	Officer	N	20	30	50	
		%	40,0%	60,0%	100,0%	
	Total	N	194	56	250	
		%	77,6%	22,4%	100,0%	

DISCUSSION

This study provides an insight into the wearing habits of sunglasses in society, the reasons for wearing sunglasses and the awareness of the damage caused by the sun's rays to the eye tissues. It was found that the

relationship between the wear of sunglasses, age, place of living, level of education and occupation was statistically significant (p<0.05). It was found that participants who were older, lived in the village, were illiterate and were unemployed did not wear sunglasses. When asked about the

purpose of wearing sunglasses, the majority of participants over the age of 45, women, villagers, the illiterate and the unemployed reported that they used sunglasses for aesthetic and cosmetic reasons. Most of the participants aged over 45, living in the village, illiterate and unemployed were careful about the brand and price options

when buying sunglasses. Most of the participants over 45 years of age, living in the village, illiterate and unemployed reported that they did not know anything about UV. However, 82.9% of university graduates reported that "I know that the sun's rays are harmful to the eyes".

Table 6. Relationship between the knowledge of UV radiation and other variables

			What do you know about the sun's harmful UV rays?			Total	p value
			I am not knowledgeable about this.	I know that the sun's rays are harmful to the skin, but I do not think they are harmful to the eyes.	I know that some rays of the sun are harmful to the eyes.		
Age	Under 45 years old	N	42	35	61	138	0,000
		%	30,4%	25,4%	44,2%	100,0%	
	Over 45 years old	N	86	21	5	112	
		%	76,8%	18,8%	4,5%	100,0%	
	Total	N	128	56	66	250	
		%	51,2%	22,4%	26,4%	100,0%	
Gender	Male	N	69	9	32	110	0,000
		%	62,7%	8,2%	29,1%	100,0%	
	Female	N	59	47	34	140	
		%	42,1%	33,6%	24,3%	100,0%	
	Total	N	128	56	66	250	
		%	51,2%	22,4%	26,4%	100,0%	
Living place	City centre/ District	N	109	55	65	229	0,001
		%	47,6%	24,0%	28,4%	100,0%	
	Village	N	19	1	1	21	
		%	90,5%	4,8%	4,8%	100,0%	
	Total	N	128	56	66	250	
		%	51,2%	22,4%	26,4%	100,0%	
Education	Illiterate	N	37	0	0	37	0,000
		%	100,0%	0,0%	0,0%	100,0%	
	Primary school	N	40	8	0	48	
		%	83,3%	16,7%	0,0%	100,0%	
	Middle/High school	N	49	37	3	89	
		%	55,1%	41,6%	3,4%	100,0%	
University	N	2	11	63	76		
	%	2,6%	14,5%	82,9%	100,0%		
	Total	N	128	56	66	250	
		%	51,2%	22,4%	26,4%	100,0%	
Occupation	Unemployed	N	60	38	13	111	0,000
		%	54,1%	34,2%	11,7%	100,0%	
	Student	N	11	5	11	27	
		%	40,7%	18,5%	40,7%	100,0%	
	Retired / Selfemployed	N	54	6	2	62	
		%	87,1%	9,7%	3,2%	100,0%	
	Officer	N	3	7	40	50	
	%	6,0%	14,0%	80,0%	100,0%		
	Total	N	128	56	66	250	
		%	51,2%	22,4%	26,4%	100,0%	

There are several ways to protect the eye from UV rays and prevent ocular diseases caused by UV exposure. The most common method is to

wear sunglasses with a UV filter that filters out 99-100% of UV rays (8). In a South African study, most participants were aware that the sun's

rays have negative effects on the eyes (9). Similarly, a high level of awareness of exposure to UV rays during outdoor activities has been reported in Australia (10). In our study, we found that awareness of the negative effects of sunlight on the eyes was very low among illiterate people, primary school graduates, people living in villages and participants over the age of 45. However, it was found that awareness of UV was quite high among officials and university graduates.

In our study, the wearing of sunglasses was quite high among university graduates. In a similar survey of academic members of staff on 'sun protection attitudes and behaviors', 77% of respondents used sunscreen, 45% used hats and 74% used sunglasses (11). Similar to what we found, one study from China reported that while the majority of people surveyed were aware of the harmful effects of UV rays on the skin, only a small percentage of people were able to identify the harmful effects of UV rays on the eye (12).

Various studies have shown that women are more adaptable and knowledgeable about using UV-protective eyewear. This can be explained by the fact that through women's magazines and the media, women are aware of protective sunglasses, sunscreen and skin care (13,14).

60.4% of participants in our study reported wearing sunglasses. Similar to what we found, In studies, 60.2% of adults in Saudi Arabia (15) and 80% of adults in Kuwait (16) reported the use of

sunglasses. One study found that the age group most likely to wear sunglasses was 31-50 years old (17). In our study, 79.7% of people aged under 45 and 36.6% of people aged over 45 reported wearing sunglasses. According to the survey, the reason for the lower wear of sunglasses among the elderly may be due to their lower awareness of the need for sunglasses to protect their eyes from the sun's rays.

It was found that only 26.4% of participants in the survey study were aware that the sun's rays can damage both skin and eye tissue. In another study, most people knew about the effects of UV on skin cancer (95.6%) and sunburn (92.2%). However, few people knew that UV can cause eye damage. For this reason, various activities should be carried out to raise awareness of the need to protect eye tissue from the sun's rays (13). Public service announcements or social media can be used to raise public awareness of sun exposure and explain how to protect against it.

Study Limitations

The limitations of our study were as follows: 1) the cross-sectional design of our study did not allow us to specify the causality of the relationships that were identified; 2) the research data were based on the statements of the participants; 3) the high number of illiterate people in the study; and 4) as the survey was conducted between January and March, examining information from the summer may

have been the source of various information errors.

CONCLUSION

Exposure to UV rays is a risk factor for ocular disease. This study assessed awareness, knowledge and protective behaviors regarding UV rays, the habit of wearing sunglasses in society and ocular damage associated with exposure to UV rays. Awareness of UV rays, associated ocular diseases and behaviors to protect against UV rays was low. Awareness of UV rays and UV protection behaviors were higher among younger people and women. These findings suggest that more efforts should be made to promote the use of protective sunglasses.

Ethics Committee Approval: This prospective, cross-sectional study was conducted in Elbistan State Hospital Clinic of Ophthalmology and adhered to the principles of the Declaration of Helsinki. Ethics committee approval for the study was obtained from the Clinical Research Ethics Committee of the Kahramanmaraş Sütçüimam University Faculty of Medicine (Number: 2022/23-88/06).

Author Contributions: Surgical and Medical Practices: ZÇ, Concept: ZÇ, Design: ZÇ, Data Collection or Processing: ZÇ, Analysis or Interpretation: ZÇ, Literature Search: ZÇ, Writing: ZÇ.

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