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Original Research Article

Comparison of the knowledge level of individuals living in rural and urban areas about skin cancer and sun protection

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ABSTRACT

Background: Among the types of cancer, skin cancer stands out due to its increasing incidence rate both in Turkey and around the world. This study was conducted to compare the knowledge level of the people living in rural and urban areas about skin cancer and sun protection.
Methods: The study was conducted with 384 people living in Kirazlı village (rural area) and Türkmen district (urban area) in Kuşadası. Kuşadası town is located in Turkey's western region. Individual's skin cancer and sun protection knowledge levels were evaluated with Skin Cancer and Sun Knowledge Scale consisting of 25 items.
Results: As a result of this evaluation, the median values were 12.5 for the people living in rural areas and 15 for the people living in urban areas. It was found that there was a statistically meaningful difference between skin cancer and sun knowledge scale points of the people living in rural and urban areas ($U=9419.5$, $p<0.01$).
Conclusions: This study concludes that individuals from urban populations were more knowledgeable than the ones from rural populations in the field of skin cancer and the sun protection behavior.

Keywords: Skin cancer, Ultraviolet radiation, Sun protection factor, Rural populations, Urban populations, Public health nursing

INTRODUCTION

Cancer is one of the major health issues in the world and is considered to pose the biggest obstacle for increasing life expectancy.[1] The leading cause of death in many high-income countries, cancer is expected to become the major cause of morbidity and mortality in the rest of the world in the next few decades regardless of the cause level.[2]

Skin is an organ that has a high incidence of cancer due to its large surface area and high exposure to ultraviolet rays. Skin cancer is the most common type of malignancy in humans, and with its incidence rate on the rise, it has become an important public health issue.[3] Another reason skin cancer constitutes a major public health issue is that it not only affects people of all ethnic origins, socioeconomic and demographic groups, and geographical regions, it also affects a person's entire life. Among the types of cancer, skin cancer stands out due to its increasing incidence rate both in Turkey and around the world. Over the past 30 years, the rate of confirmed cases of skin cancer has increased faster than any of the 10 most common cancer types in the UK.[4] In the data shared by the International Agency for Research on Cancer, the global number of new cases of skin cancer (melanoma and non-melanoma) for 2018 was reported as 1,329,779.[5,6] According to the data published by Globacan, the number of melanoma skin cancer cases in Turkey has increased from 620 new cases in 2012 to 1622 new cases in 2018.[7,8] The number of melanoma skin cancer cases in Turkey in the last five years has been reported as 4809.[9] And the growing number of new cases in the last ten years is particularly noteworthy.[9]

As with most types of cancer, skin cancer prevention, too, requires individuals to do/have check-ups for early diagnosis, and the treatment of suspicious lesions, if present. Moreover, in regions where skin cancer is common, it is also vital to inform the public about the self-examination methods against skin cancer and to foster social awareness on the issue.[10] Awareness of how to behave in the sun is crucial in countering rapidly increasing prevalence of skin cancer seen among many populations.[11,12]

Greater number of sunny days experienced in Turkey and the growing impact of global warming in recent years has increased the significance of the knowledge on the harmful effects of uncontrolled sun exposure[13] Thus, determining the level of public knowledge about skin cancer and sun exposure, planning social trainings on lacking issues and correcting the misinformation and false facts has become crucial. Determining the risk groups should be made a priority in the planning and implementation of such trainings. While determining the risk groups, individuals residing in areas with more sunny days should be given precedence since they are faced with higher exposure to UV rays.[14]

In terms of the risk zones and risk groups, the Kusadasi district, one of Turkey's most popular holiday destinations with plenty of sunlight year-round thanks to its the geographical location, is an important touristic and agricultural center of the Aegean Region. The recorded average number of sunny days per year in Kusadasi is 197.5 days.[15] The local population of Kusadasi is expected to face high risk of exposure to the harmful effects of the sun due to ongoing agricultural production enabled by the district's coastal location, warm climate and fertile lands. Based on these facts, the present study was designed for the purposes of comparing the skin cancer and sun knowledge of the rural and urban populations in Kusadasi district of Aydin Province located in the Western region of Turkey.

METHODS

The present study employed the comparative descriptive design. The research was conducted between August-September 2019 in Kirazli village, which represents the rural area, and Turkmen sub-district, which represents the urban area, of Kusadasi district, Aydin province. Kuşadası town is located in Turkey's western region. When determining the study sample size, only the process of sample size calculation with the Type 1 error was performed among the methods of sample size calculation using power analysis.[16] As a result of the sample calculation, the sample size was determined as 384 individuals. This number was divided into two and the sample size was determined as 192 individuals for the rural area and as 192 individuals for the urban area. The random sampling method, one of the improbable sampling methods, was employed in selecting the individuals for sampling.

The data were collected by the investigator between August 15 to September 30, 2019 utilizing the face-to-face interview method, individual identification form, Skin cancer and sun knowledge (SCSK) Scale. The individual identification form was developed by the investigator with help from the literature to determine the socio-demographic characteristics and risk factors of the individuals.[10,14,17-22] The said form consists of two parts and 13 questions in total. The first part includes seven questions related to socio-demographic characteristics such as gender, age, educational background, marital status, occupation, area of residence, and income status, while the second part is comprised of six questions regarding the individual risk factors (skin color, eye color, presence of moles, sunburn history, family history of skin cancer, and sun exposure).

Skin cancer and sun knowledge Scale was developed by Day et al to determine the knowledge levels of individuals on skin cancer and sun protection, and its validity and reliability study of the Turkish version was conducted by Haney et al.[18,21] The scale consists of 25 items related to skin cancer and sun protection. It assess adults' knowledge in five fields including sun protection (item 1, 16-22), tanning (item 2-12), skin cancer risk factors (item 13-14, 23), prevention of skin cancer (item 15, 24) and symptoms of skin cancer (item 25). scale items consist of 15 true-false questions and 10 multiple-choice questions. Correct choice is matched with 1, and wrong choice is matched with 0 for each item. The total score obtained by the addition of the item scores ranges between 0-25 points, and higher scores indicate a higher level of knowledge.[21] The internal consistency reliability coefficient (KR-20) of the Skin Cancer and Sun Knowledge Scale was found to be 0.58 for the sample group.

Statistical package for social science (SPSS) 22.0 package program was utilized in the statistical analysis of the data. Descriptive statistics such as number, percentage, standard error, standard deviation, and median value were used for the evaluation of skin cancer and sun knowledge. Data compliance with normal distribution was evaluated using Shapiro Wilks tests, which revealed a non-normal distribution (SW=0.971, p=0.001). To that end, Mann Whitney U test, one of the nonparametric tests, was used to compare scale scores of individuals residing in rural and urban areas. In the present study, hypothesis tests were evaluated based on the significance level of α=0.05.

RESULTS

Socio-demographic characteristics of the individuals

The average age of the individuals residing in rural areas is 44.11±15.10, while that of the individuals living in urban areas is 41.14±12.72. Males constitute 52.1% of the study participants residing in rural areas, and 37.0% of those living in urban areas. Only 4.7% of the individuals residing in rural areas are university graduates, while 44.3% of

those residing in urban areas are university graduates, and there are no unlettered individuals among them (Table 1).

Table 1: Distribution of individuals living in rural and urban areas according to their socio-demographic features.

Socio-demographic Features	Rural		Urban	
	N	%	N	%
Sex				
Men	100	52.1	71	37.0
Women	92	47.9	121	63.0
Age (years)				
18-29	45	23.4	34	17.7
30-39	33	17.2	56	29.2
40-49	32	16.7	46	24.0
50-59	39	20.3	35	18.2
60 and above	43	22.4	21	10.9
Marital status				
Married	144	75	129	67.2
Single	48	25	63	32.8
Educational background				
Illiterate	4	2.1	0	0.0
Literate and elementary school	108	5.5	29	15.1
Middle school	36	18.8	18	9.4
High school	3	18.2	60	31.2
University	9	4.7	85	44.3
Employment status				
Employed	134	69.8	107	55.7
Unemployed	58	30.2	85	44.3
Occupation				
Farmer	95	70.9	0	0
Civil servant	1	0.7	52	48.6
Worker	17	12.7	38	35.5
Freelancer	21	15.7	17	15.9
Income status				
Income less than expense	91	47.4	47	24.5
Income equal to expense	82	4.7	107	55.7
Income higher than expense	19	9.9	38	19.8
Total	192	100	192	100

Individual skin cancer risk factors

Evaluation of the study group in terms of genetic risk factors for skin cancer revealed that 33.4% of the individuals residing in rural areas have light skin color (fair and brown) and 29.2% have light eye color, while 51.6% of individuals residing in urban areas have light skin color and 24.0% have light eye color.

Evaluation of the presence of moles, which is another risk factor for skin cancer, for individuals residing in rural and urban areas revealed that more than three-fifths (67.2% - 68.8%) of the individuals residing in rural and urban areas have moles in visible body areas that are more likely to be exposed to the sun such as the face, the neck and extremities. The present study found the ratio of individual with a history of sunburn as 36.5% in rural areas and as 32.8% in urban areas. It was also found that 6.2% of the individuals residing in both areas had a family history of skin cancer (Table 2).

Table 2: Distribution of individuals living in rural and urban areas according to their risk factors of skin cancer skin cancer risk factors rural urban.

Skin cancer risk factors	Rural		Urban	
	N	%	N	%
Skin color				
Brunetter	56	29.2	40	20.8
Fair	23	12	18	9.4
Brown	41	21.4	81	42.2
Wheat	72	37.5	53	27.6
Eye color				
Light coloured (blue, green, grey)	56	29.2	46	24
Dark coloured (brown, black)	136	70.8	146	76
Presence of moles				
Yes	129	67.2	132	68.8
No	63	32.8	60	31.2
History of sunburn				
Yes	70	36.5	63	32.8
No	122	63.5	129	67.2
Skin cancer in family				
Yes	12	6.2	12	6.2
No	180	93.8	180	93.8
Total	192	100	192	100

Individuals' knowledge of skin cancer and sun protection

Individuals' knowledge of skin cancer and sun protection was evaluated using the skin cancer and sun knowledge scale (SCSK), which revealed the median value of the skin cancer and sun protection knowledge scores of those residing in rural areas as 12.5 and the scale score median of those residing in urban areas as 15.0 (Table 3). A statistically highly significant difference was found between the skin cancer and sun protection knowledge scores of individuals residing in rural and urban areas ($U = 9419.5$ $p<0.01$) (Table 3).

For the SCSK sub-scales of individuals residing in rural and urban areas, a significant difference was found between their knowledge of sun protection ($p<0.01$), tanning ($p<0.01$), skin cancer risk factors ($p<0.01$), skin cancer prevention ($p<0.01$) and skin cancer symptoms ($p<0.01$) (Table 3).

Table 3: Comparison of SCSK of individuals living in rural and urban areas and SCSK sub-scale points.

SCSK	Number (N)	Median (Min-Max)	Mean Rank	Z	U	p
Scale total points						
Rural	192	12.5 (5-21)	145.56	-8.326	9419.5	**0.000***
Urban	192	15 (6-23)	239.44			
Sun protection						
Rural	192	3.00 (0-7)	152.01	-7.320	10658.5	**0.000***
Urban	192	4.00 (1-7)	232.99			
Tanning						
Rural	192	7.00 (2-11)	169.17	-4.178	13952.0	**0.000***
Urban	192	7.00 (2-11)	215.83			
Skin cancer risk factor						
Rural	192	1.00 (0-3)	161.32	-5.814	12445.5	**0.000***
Urban	192	2.00 (0-3)	223.68			
Skin cancer prevention						
Rural	192	1.00 (0-2)	179.96	-2.769	16023.5	**0.006***
Urban	192	1.00 (0-2)	205.04			
Skin cancer symptoms						
Rural	192	0.00 (0-1)	168.00	-5.019	13728.0	**0.000***
Urban	192	1.00 (0-1)	217.00			

DISCUSSION

The present study was conducted in Kusadasi, Turkey with the aim to compare skin cancer and sun knowledge of the individuals residing in urban and rural areas. In the literature, sun exposure is the foremost factor among the environmental and individual risk factors. With a very sunny and warm climate and a population living off tourism and agriculture due to its geographical position, Kusadasi district is home to a population that is at risk of skin cancer. Socio-demographic characteristics of the individuals (such as age, place of residence, and occupation) and individual risk factors (such as sun exposure hours, and genetic factors) have in impact on their attitude, knowledge and behavior towards sun protection. It is a known fact that and individual's skin cancer and sun protection behaviors are directly proportionate to the extent of their knowledge and awareness about skin cancer and the sun.[12,19,20,23,24]

When considered in this context, approximately three-fourths (70.9%) of the individuals residing in rural areas were farmers, and the daily sun exposure was found to be 6.38±3.24 hours. On the other hand, more than three-fourths (84%) of the individuals residing in urban areas consisted of civil servants and workers with more limited sun exposure due to their occupation, and their daily sun exposure was found to be 3.61±2.46 hours. Numerous other studies in the literature found results that are consistent with results of the present study, demonstrating that individuals and farmers who work outdoors were exposed to the sun for very long hours 25,28–30. Taking into consideration both the occupational group and sun exposure hours, these results indicate that sun exposure of the individuals residing in rural areas may be much higher than those residing in urban areas.

A comparison of the skin cancer and sun protection knowledge of individuals residing in rural and urban areas, on the other hand, reveals that those residing in rural areas have less knowledge on said topics than those residing in urban areas (Table 3). As a result of the present study, it can be argued that individuals residing in urban areas have greater knowledge of sun protection, tanning, skin cancer risk factors, skin cancer prevention and skin cancer symptoms, compared to those residing in rural areas (Table 3). Individuals residing in rural areas are clearly among the priority groups that require screening programs, trainings and cooperation on skin cancer knowledge and sun avoidance behavior.

A previous study using the Skin cancer and sun knowledge scale reported similar findings, showing that the individuals participating in the study were unable to answer most of the items that measured their knowledge on sun protection, tanning, skin cancer prevention and skin cancer symptoms.[18,21] In their study, Dağ and Hisar (2016) investigated the knowledge the individuals working outdoors have on skin cancer, and found that the majority (70.3%) did not have any knowledge about the subject.[31] Malak et al (2011) found that a very small number of the farmers (1.9%) had knowledge about skin cancer and none of the individuals participating in the study had sufficient knowledge about skin cancer and the harmful effects of sun exposure.[25]

Similar to our study, a study between a group of farmers and non-farmers in the United States demonstrated that

farmers represent a unique population at risk of skin cancer with significant differences in skin cancer beliefs, knowledge, sun protection practices, and health care information sources compared to non-farmers. Despite their sun protection knowledge and beliefs, sun protection practices are much less common among farmers; thus, initiatives were recommended to improve sun protection behaviors for this population at risk.[32]

A brief report published in Australia in 2008 comparing the sunburn knowledge of adults residing in the metropolitan and rural areas of the State of Queensland found that rural areas reported higher number of sunburn episodes. The study results highlighted the difference between the awareness and attitude towards sun exposure and the area of residence. It was emphasized the need for additional preventive efforts and resources for individuals residing in non-metropolitan areas.[33]

An examination of the literature revealed that, although outdoor workers, farmers and gardeners face greater risk of skin cancer, the rates of sun avoidance and use of sunscreen products among these group remain extremely low.[29,32,34] As a result of their literature review in Australia, Smit-Kroner and Brumby (2015) concluded that farmers use very limited to almost no sun protection.[34]

A study conducted with outdoor workers (farmers, gardeners and roofers) in Germany in 2017 found that these outdoor workers who constitute the high-risk group are unaware of the anticipated high risks and have very poor sun protection practices. The same study said that, although the group shows interest in the issue, effective and sustainable, target group-oriented awareness and prevention programs are needed for expensive and time-consuming protection methods.[35]

CONCLUSION

The present study found that the rural and urban populations in Kusadasi district located in the western Turkey have a moderate level of knowledge on skin cancer and sun. It has been demonstrated that individuals residing in rural areas have less knowledge about skin cancer and sun protection than those residing in urban areas. Considering the results of the present study, the individuals residing in rural areas have a low level of knowledge, and as such, they are the high-priority group that clearly requires greater effort towards increasing their knowledge and awareness. Therefore, inclusive, accessible, sustainable and affordable initiatives and programs, which draw upon local support and political authority, should be developed for the farmers and outdoor workers residing in rural areas. In holiday destinations with developed agriculture and tourism and high number of sunny days such as Kusadasi, campaigns should be launched to raise public awareness about the beneficial and harmful effects of the sun, training programs should be developed to prevent negligence in sun protection practices when benefiting from the sun, and screening programs should be implemented against skin cancer. The scale was found to have limited comprehensibility due to the low Cronbah alpha value of the Skin Cancer and Sun Knowledge Scale used in the present study. Therefore, it is recommended that the validity and reliability study for the scale is repeated with different sample groups.

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