

Knowledge and Attitudes towards Sun Protection in Croatia

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ABSTRACT

Skin cancer is the most common form of cancer; the World Health Organization estimates that more than 2 million cases of skin cancer are being diagnosed each year worldwide. Excessive sun exposure and ultraviolet (UV) radiation are the major avoidable risk factors for skin cancer, including melanoma. Sun protection can be achieved through behavioral modification, social changes and environmental changes: regular use of sunscreen, wearing hats and protective clothes, staying in the shade, creating shade by planting trees or constructing canopies, practicing work and sport activities during the time of the day when the sun is not the strongest and many others. The aim of this paper was to investigate the knowledge and attitudes about sun protection and sun behavior patterns in Croatia, as well as the perception of melanoma among general population. Our results indicate relatively good sun behavior patterns among our participants and their mostly correct perception of melanoma.

Key words: skin cancer, sun protection, illness perceptions

Introduction

Skin cancer is the most common form of cancer; the World Health Organization estimates that more than 2 million skin cancers are being diagnosed each year worldwide¹. There are numerous types of skin cancer but the three most common types are basal cell carcinoma (BCC), squamous cell carcinoma (SCC) and melanoma². BCC forms in basal cells and SCC forms in squamous cells in the outer layer of the skin and both types rarely metastasize². Melanoma is a malignant tumor of melanocytes and is considered to be one of the most malignant forms of skin cancer³. Even though melanoma accounts for only 3% of all skin cancers, it is responsible for more than 75% of skin cancer related deaths⁴. It is characterized by the tendency for early lymphogenous and hematogenous metastases, with somewhat low local aggressiveness³. Annual incidence of melanoma in Croatia is 11.5 new cases *per* 100.000 population. From the 1960 to the present time there has been a steady rise in the incidence of melanoma in all parts of the world. In Croatia, the incidence of melanoma has increased 310% in the last 40 years, with 580 newly diagnosed melanomas in 2005⁵. Excessive sun exposure and ultraviolet (UV) radiation are the major

avoidable risk factors for skin cancer, including melanoma⁶. Experts hypothesize that 90% of the cases of nonmelanoma skin cancer and two thirds of the cases of melanoma may be attributed to excessive sunlight exposure⁷. The best way to prevent skin cancer is sun protection, especially taking into account other risk factors like fair skin that easily burns, red or blonde hair, large number of acquired melanocytic naevi and freckles, dysplastic naevi, recurrent sunburns especially in childhood, skin cancer in the family etc. Sun protection can be achieved through behavioral modification, social changes and environmental changes⁸. Except for the use of sunscreen – the most common form of sun protection, sun protection includes diverse activities such as wearing hats and protective clothes, staying in the shade, creating shade by planting trees or constructing canopies, practicing work and sport activities during the time of the day when the sun is not the strongest and many others⁷. Even the use of sunscreen has to be recommended carefully – it is not enough to only use sunscreen, it had to be used correctly otherwise it gives a false sense of security during a long period in the sun causing more damage than good⁹.

The aim of this paper was to investigate the knowledge and attitudes about sun protection and sun behavior patterns in Croatia. The correlation between the perception of melanoma and sun behavior patterns was also a point of interest in this study.

Materials and Methods

The study was conducted at the Clinic for Dermatovenereology, University Hospital »Sestre milosrdnice«. 300 participants were included in this study, all outpatients at the Clinic for Dermatovenereology, visiting the Clinic for different dermatological problems. All participants visiting because of the diagnosis of skin cancer, or having a family member with the same diagnosis were excluded from the study. Questionnaires were offered in the waiting room for the people to fill in if interested. Following questionnaires were used: Sun behavior patterns questionnaire and Brief Illness Perceptions Questionnaire.

Sun related behavior patterns questionnaire was developed at the Clinic for Dermatovenereology. It consisted of 16 questions concerning age, gender, education, previous melanoma diagnosis, family history of melanoma, skin, hair and eye color, sunburns in childhood, number of naevi, time spent in the sun during the day and during the year, use of sunscreen, SPF factor, tanning beds use and attitude toward sunbathing.

»Brief Illness Perceptions Questionnaire« (Brief IPQ) is a nine-item scale designed to rapidly assess the cognitive and emotional representations of illness. It was developed by Broadbent, Petrie, Main and Weinman in 2005 to assess the five cognitive illness representations (identity, cause, timeline, consequences and cure/control) and one emotional representation on a five point Likert scale.

Statistical analysis was conducted using SPSS, version 12. Descriptive statistics were calculated for all variables, Student t-test was calculated to determine the differences between groups and Pearson’s correlations were calculated to determine the relationships between variables.

Results

Three hundred forty-two (342) outpatients treated at the Clinic for Dermatovenereology of University Hospital »Sestre milosrdnice« participated in this study. Forty-two (42) participants were excluded from the study: 10 were previously diagnosed with melanoma, 21 had a family history of melanoma and 12 were younger than 18. Of the remaining 300 participants, 214 (71.5%) were women and 86 (28.5%) were men. The mean age was 44.34 (range 18–82). Only 2% of patients had primary education, 36.3% had secondary education, 6% had undergraduate education and 32.3% had University degree.

Results of participants skin color, hair color and eye color are shown in Table 1. Results of attitudes towards sunbathing are reported in Table 2. Table 3 shows how

much time participants spend in the sun during the whole year, during the day, use of artificial sunbathing, use of sunscreens and used sunscreen SPF values. Having sunburns in childhood and number of naevi are shown in Table 4.

Perception of melanoma

Participant’s perception of melanoma was somewhat correct. They think that melanoma has a great impact on patient’s life ($\bar{X}=8.05$, $SD=2.38$), that it lasts relatively long ($\bar{X}=6.65$, $SD=2.93$) and that patients do not feel many symptoms of their illness ($\bar{X}=3.79$, $SD=3.04$). They do not think patients have much control over the course of their illness ($\bar{X}=3.91$, $SD=2.84$), but on the other hand they think that the treatment can be quite helpful in curing melanoma ($\bar{X}=6.73$, $SD=2.56$).

Causes of melanoma

In the Illness Perceptions Questionnaire there was one qualitative question about the perceived causes of melanoma – participants are given the opportunity to name the three most important causes of melanoma. 257 participants see sun or the UV radiation as one of the most important causes of melanoma. Second most common perceived cause is genetic predisposition – 174 par-

TABLE 1
DESCRIPTIVE STATISTICS FOR SKIN, HAIR AND EYE COLOR

		N	%
Skin color	Very fair	24	8.1
	Fair	168	56.4
	Dark	90	30.2
	Very dark	16	5.4
	Reddish	3	1.0
Hair color	Blond	49	16.3
	Brown	189	63.0
	Dark	59	19.7
Eye color	Blue	67	22.6
	Green	88	29.6
	Brown	142	47.8
	Total	297	100.0

TABLE 2
DESCRIPTIVE STATISTICS FOR ATTITUDES TOWARDS SUNBATHING

		N	%
Attitudes towards sunbathing	I do not sunbath because it is harmful	58	19.8
	When being at the seaside I am in the shade or swimming in the sea	98	33.4
	I like sunbathing moderately	121	41.3
	I love sunbathing and tanning	16	5.5

TABLE 3
DESCRIPTIVE STATISTICS FOR DIFFERENT SUN BEHAVIOR PATTERNS

		N	%
Time spent in the sun during the year	<than 3 weeks	122	40.8
	>than 3 weeks	131	43.8
	During the whole year	46	15.4
Time spent in the sun during the day	I go out only in the evening	11	3.7
	I go out only in the morning and evening	187	63.4
	During the whole day	97	32.9
Use of artificial sunbathing	Never	257	86.0
	Before summer holidays	23	7.7
	3–4 times a year	14	4.7
	1–2 times a month	4	1.3
	Once in a week	1	0.3
Use of sunscreen	Never	30	10.2
	Only during summer holidays	211	71.5
	From spring to autumn	48	16.3
	During the whole year	6	2.0
Used sunscreen SPF values	<10	29	11.2
	10–20	112	43.2
	21–30	68	26.3
	31–50	50	19.3

Participants see this as an important cause of melanoma. All other perceived causes are much less represented: 36 participants think artificial sunbathing is the cause of melanoma, 34 – injury of the mole, 28 – stress, 28 – not using sunscreen, 20 – sunburns in childhood, 20 – poor care about health, 17 skin color, 16 – number of naevi, 16 – dysplastic moles. There are other rare answers like: poor knowledge, skin damage, other skin diseases, sensitive skin, poor diet, smoking, alcohol, poor skin care, lack of vitamins and minerals, pregnancy, transfusion, liver condition, bad luck or faith.

Correlations

Results showed statistically significant correlation between sex and sun behavior patterns: men spent more time in the sun both during the whole year and during the day ($r=0.23$, $r=0.17$, respectively); while women use

artificial sunbathing more and they use sunscreen much longer during the year ($r=-0.23$, $r=-0.12$, respectively). Significant correlation was also shown between age and sun behavior patterns: younger population, in comparison to older, spends more time in the sun during the day, they use artificial sunbathing more, and they use sunscreen in shorter period during the year ($r=-0.19$, $r=-0.29$, $r=-0.20$, respectively). There was no statistically significant correlation between educational level and sun behavior patterns except with the use of artificial sunbathing ($r=-0.14$): people with higher level of education use artificial sunbathing less than people with lower level of education.

Correlations between number of naevi and sun behavior patterns were not statistically significant, except for the positive correlation between the number of naevi and SPF number ($r=0.27$): those with more naevi use higher sunscreen SPF values.

Statistically significant correlations were found between attitudes towards sunbathing and skin and hair color, age and number of naevi: these results show that people with darker skin and hair, lower number of naevi and younger population like sunbathing more ($r=0.12$, $r=0.16$, $r=-0.20$, $r=-0.17$, respectively).

Significant correlations were shown between sun behavior patterns and skin, hair and eye color: people with darker skin color spent more time in the sun during the year and people with darker skin, hair and eyes spent more time in the sun during the day ($r=0.17$, $r=0.22$, $r=0.16$, $r=0.13$, respectively).

TABLE 4
DESCRIPTIVE STATISTICS FOR SUNBURNS IN CHILDHOOD AND NUMBER OF NAEVI

		N	%
Sunburns in childhood	Yes	141	48.0
	No	118	40.1
	I do not know	35	11.9
	<10	109	37.5
Number of naevi	10–50	109	37.5
	>50	73	25.1

People who spent more time in the sun during the year, also spent more time in the sun during the day ($r=0.26$). The more time they spend in the sun during the day, more likely they are to use artificial sunbathing and they use sunscreen with lower SPF values ($r=0.13$, $r=-0.16$, respectively). Statistically significant positive correlation was reported between use of sunscreens and used sunscreen SPF values ($r=0.15$) meaning that people who more often use sunscreens also use higher SPF values.

Correlations with perception of melanoma

Gender was not significantly correlated with perception of melanoma, except for perceived impact of melanoma on patient's life ($r=0.16$): men think that melanoma has lower impact on patient's life than women. Skin, hair and eye color, number of naevi and participant's age were not significantly correlated with perception of melanoma.

Educational level was significantly correlated with perception of treatment of melanoma and perception of symptoms of melanoma ($r=-0.14$, $r=-0.14$, respectively): those with higher educational level think that treatment is less effective and that patients with melanoma have less symptoms than those with lower education.

Sun behavior patterns did not show statistically significant correlations with perception of melanoma except for the statistically significant negative correlation between perception of melanoma's impact on patient's life and time spent on the sun during the year and perception of symptoms of melanoma and use of artificial sunbathing ($r=-0.18$, $r=-0.14$, respectively): participants who spent more time in the sun during the year think that melanoma does not have great influence on patient's life and those who use artificial sunbathing more often think that patients with melanoma do not feel much symptoms. Attitudes towards sunbathing showed no significant correlations with perception of melanoma.

Discussion

Results from this study show relatively good sun behavior patterns among our participants and their mostly correct perception of melanoma. When interpreting these results we have to take into consideration that participants in our study were outpatients at the Clinic for Dermatology, seeking dermatological care. Through their care about dermatological problems and their visits to our Clinic they probably gained some basic knowledge about sun protection and recommended sun behavior patterns. For example, in the waiting room at the outpatient clinic there are posters and leaflets available giving information about melanoma and sun protection. Another fact that could have influenced results is that 71.5% of participants were women who pay more attention to their skin and health in general. Women are generally more informed about skin care, sun protection and skin cancer from the popular women's magazines and newspapers which can influence their sun behavior pat-

terns more than this is the case in men, and this fact was confirmed both in our and in other studies.

Attitudes towards sunbathing are adequate among majority of our participants: 40.3% like to sunbath moderately and 32.7% spend time on the sun only during swimming in the sea otherwise seeking shade. Still, it is worrying that 32.3% of participants spend the whole day in the sun. Men spend more time in the sun both during the year and during the day, and women use sunscreens longer through the year. Results showing that women are more cautious about sun protection were confirmed in other studies as well: Huges et al. and Arthey et al. reported that adult female were more knowledgeable about skin cancer and more engaged in sun protective behaviors than adult men^{10,11}.

Results from this study show that younger population spends more time in the sun during the day and uses sunscreen less during the year. Other researchers reported children and younger adolescents having more positive sun protective attitudes and behaviors when compared with older adolescents (aged >14 years)¹². It was shown that positive sun protective attitudes decrease with an increase in age in adolescence and increase in positive attitude toward a tan^{13,14}. Adolescents are easily influenced by the norms and opinions of others, and as long as the great tan is considered a sign of beauty among their peers it will be difficult to change their sun behavior patterns. Making the education about sun risks and skin cancer an obligatory part of the program in schools might influence a general attitude towards sun protection among adolescents.

Sunscreen's use is one of the most common preventive method for adults and youth both^{15,16}. Our results showed that 70.3% of participant's use sunscreens only during the summer holidays and only 16.7% use sunscreen SPF value 31–50. This is too short time of using sunscreen protection during the year and too small number of people using adequate SPF value. This could be due to socioeconomic status in our country and elsewhere since research has shown that the price of SPF products has a strong influence on their use. Also, use of relatively low SPF factor might be due to the still existing desire to reach a good tan¹⁷. Participants who use sunscreens more often use higher sunscreen SPF values. On the downside this can reduce the feeling of getting sunburned or might lead to false sense of having protection during whole day. This finding was reported by Autier et al.¹⁸. Our findings indicate that participants who spend more time in the sun during the day also use sunscreen with lower SPF values which proves that people either pay more attention to sun protection on all levels or they still have not reach that change in sun behavior patterns and we can see that there are still lots of gaps to fill with population education on preventive methods.

Our results showed 85.7% of participants never use artificial sunbathing and only 1.3% of participants use it as often as once or twice a week. These results are encouraging even though we have to take into consider-

ation that these participants were outpatients treated at our Clinic with some basic knowledge of sun risks. Despite women's good attitudes toward outdoor sunbathing, women use artificial sunbathing more often than men. Moreover, younger population uses artificial sunbathing more than older one. Similar results were shown from other authors; for example in a study by Geller et al. they showed that female adolescents are the population most likely to use tanning beds¹⁹. Study by Devos et al. and Mawn et al. also showed women and younger adults using more tanning booths and beds^{12,20}. Desire for tanning can be at least partly explained with the influence from the media and world of fashion. All beautiful women and men with »healthy« tanned skin jumping from advertising notices send messages of unrealistic beauty. Few studies reported women having greater desire for a tan and increased perception that a tan is healthy compared to men^{11,21,22}. Despite all educational campaigns about skin cancer and use of artificial sunbathing there is an increase in rate of artificial sunbath use in the USA in recent years²³. Study by Koster et al. reported a larger proportion of persons aged 15–18 who had first used a sun bed before the age of 14 than older groups²⁴. Since we did not include adolescents in our study it is hard to compare Croatian adolescents with adults, but following the results from other studies it seems that future campaigns for reducing the sun bed use should target initially young people and the high prevalence among them. Legislative solution with high law enforcement should make some changes. In our study less educated people were more likely to use artificial sun beds, which was also shown in study by Koster et al.²⁴.

Forty-seven percent (47%) of our participants reported having sunburns in childhood. Our skin »remembers« the damages from early ages and shows it all later in life. Of course children depend on the knowledge of their parents and their sun behavior patterns. Literature's findings showed that sunscreen is the most commonly used form of sun protection for children and that protective clothes and hats were less frequently used^{25,26}. Primary preventive methods are not just use of sunscreen or staying in a shade, it is also wearing protective clothes and wearing hats, environment changes like planting more trees, social change and behavioral modifications (sports and work during the time of the day when the sun is not the strongest). Our study is missing the data about sunscreen techniques (applying sunscreen correctly, applying it before sun exposure, reapplying it frequently, reaching vulnerable parts of body such as ears and neck) and other sun protection techniques, but this should be included into future research in order to direct health campaigns properly.

In this study, participant's perception of melanoma was mostly correct. There is a difference between women's and men's perception. Men think that melanoma has lower impact on patient's life than women. This

again shows women have better knowledge about skin cancer. Women read more medical or paramedical literature and are more interested in skin beauty. Furthermore participants with higher level of education think that treatment cannot help much and that melanoma is symptomless, which is mostly correct. Findings from the study by Vurnek Živković et al. showed that patients diagnosed with melanoma perceive melanoma as a relatively long lasting illness, relatively easy to control, but hard to cure; and as an illness without many consequences to their health, which is similar to perceptions our participants showed²⁷.

We also investigated participant's knowledge about the causes of melanoma. Mostly mentioned answers were UV radiation and genetic predisposition. On the other hand just a few participants mentioned sunburns in childhood, number of naevi, dysplastic naevi and not using sunscreen which shows lack of knowledge in this area. There were surprisingly many answers like poor diet, smoking, alcohol, poor skin care, lack of vitamins and minerals etc. which shows incorrect perception of causes of melanoma. People should be better educated about the risk factors for skin cancer, including melanoma in order to influence their sun behavior patterns more correctly.

Our results did not show significant connection between perception of melanoma and sun behavior patterns. This proves that people do not change their attitudes and behaviors easily because of the fear of the possible »terrible« disease, mostly because most of us do not see ourselves as potential candidates, terrible things always happen to someone else. So, putting an effort into educating people only about skin cancers will not acquire desired change in the sun behavior patterns. Study by Mahler et al. has confirmed that studies that included information on the photoaging effect of sun exposure have reported increased sun protective behavior²⁸. Emphasizing the photoaging effect and beauty-changes in skin appearance can additionally influence people's attitudes and sun behavior patterns.

Conclusion

We can conclude that range of strategies are needed to change people's attitudes and sun behavior patterns. Primary sun prevention campaigns should be targeted for specific groups at risk; mostly adolescents, children and young parents. Decreasing number of sunburns in this early age can highly decrease melanoma risk. Also it is very important to accent that sun prevention is not just use of sunscreen. Other methods are neglected. People should learn about importance of seeking shade when being in the sun, wearing protective clothes and hats, when and how to use sunscreen, avoiding being in the sun in specific time of the day, etc. Moreover, we should raise knowledge about skin cancer, especially melanoma.

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ZNANJE I STAVOVI PREMA SUNČANJU U HRVATSKOJ

SAŽETAK

Rak kože najčešći je oblik raka u svijetu: Svjetska Zdravstvena Organizacija procjenjuje da se godišnje dijagnosticira više od 2 milijuna slučajeva raka kože diljem svijeta. Pretjerano izlaganje suncu i izloženost ultraljubičastom zračenju neki su od najvažnijih uzroka raka kože, uključujući i melanoma. Zaštita od sunca može se provesti kroz brojne promjene u ponašanju te društvene i okolinske promjene. Uz najčešći oblik zaštite; upotrebu krema sa zaštitnim faktorom, tu su i brojne druge mogućnosti zaštite: nošenje kapa i zaštitne odjeće, zadržavanje u hladu, stvaranje hlada sadnjem drveća i gradnjom zaštitnih tendi, te prakticiranjem radnih i sportskih aktivnosti na otvorenom tijekom doba dana kada sunce nije toliko jako. Cilj ovog istraživanja bilo ispitati znanje i stavove prema zaštiti od sunca u Hrvatskoj, te percepciju melanoma u općoj populaciji, a dobiveni rezultati pokazuju relativno dobru informiranost sudionika o štetnosti sunca, utjecaju UV zračenja i donekle dobro poznavanje melanoma kao bolesti.