

Sun protection among university students in Poland: a survey of awareness and attitudes

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Abstract

Aim: The aim of the study was to evaluate students' awareness and attitudes related to skin protection against UVR and to check the hypothesis whether medical students differ from other faculty students in terms of health-promoting behaviour in photoprotection.

Material and methods: Internet-based survey containing 24 questions about students' knowledge and attitudes associated with sun exposure and photoprotection was carried out between March and May 2019. Two hundred and forty-three questionnaires were subject to statistical analysis.

Results: Out of 243, 149 (60.9%) respondents studied medicine and 95 (39.1%) were students of other faculties. 235 (96.7%) declared using sunscreen. 46 (18.9%) students applied it all year round and 116 (47.7%) only in the summer. Medical students chose more willingly products with SPF > 30 ($p = 0.002$). A hundred and fifty-nine (65.4%) students used sunscreen once when outdoors and 76 (31.3%) applied products more than once. Additional sun protective methods included wearing sunglasses (82.7%), hats or caps (62.1%) and avoiding sunlight around noon (46.5%). Students of the medical faculty avoided sun exposure statistically more frequently ($p = 0.042$) than students of other faculties. 28.4% had dermoscopy performed in the past. Medical students underwent dermoscopy examination statistically more frequently ($p = 0.001$) than students of other faculties.

Conclusions: Medical students, probably due to their education, show increased pro-health attitudes associated with photoprotection. This indicates that they may be involved in creation and promotion of education activities to general public.

Key words: sun protection, prevention, students, medical student.

Introduction

Photoprotection measures are methods that guard the skin from the adverse effects of sunlight. They include avoidance of sun exposure during the peak ultraviolet hours (from 10 a.m. to 4 p.m.), the use of products with ultraviolet (UV) filters, protective clothing, wide-brimmed hats and sunglasses [1]. Sunscreen is important in prevention of basal cell carcinoma and melanoma [2, 3], as well as in prophylaxis of squamous cell carcinoma [4]. Properly selected sunscreen also protect the skin against photoaging and dyspigmentations, and at the same time do not impair vitamin D production [5–7].

In recent years awareness about photoprotection has increased. Every year more social projects and campaigns are presented, but continuous education in this topic is essential.

Aim

The aim of the study was to evaluate students' awareness and attitudes related to skin protection against ultraviolet radiation (UVR) and to demonstrate whether medical students differ from other faculty students in terms of health-promoting attitudes in photoprotection.

Material and methods

The questionnaire was developed based on the interview with 20 students who expressed their opinion about their knowledge, educational needs and attitudes related to the sun protection. The survey was created using Google® Forms and consisted of 24 questions (17 single choice, 4 multiple choice, 3 open ones). It included ques-

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tions about students' practices related to sun exposure, the current sunscreen use and its use in the childhood, past sunburn and the use of tanning booths, as well as the use of additional methods of protection. Regarding the phototype assessment, the respondents rated their phototypes themselves using the attached Fitzpatrick scale. The survey was posted online on 12 Facebook® students groups with a short invitation to complete the survey (Appendix 1). The data collection was carried out between March and May 2019. A total of 252 questionnaires were obtained and 9 were excluded due to being incomplete or incorrect.

Statistical analysis

The data were collected and analysed anonymously. Complete responses were downloaded for statistical analysis (Statistica 13; Statsoft, Krakow). The correlation matrix analysis, tests for the difference between two structure indices and χ^2 test were employed. *P*-value used in testing of the null-hypothesis was 0.05.

Results

The respondents of the survey were university students of years 1–6. 148 (60.9%) of them represented medical faculty and 95 (39.1%) other faculties. Among the respondents, 187 (77%) were females and 56 (23%) were males. Regarding the Fitzpatrick scale for skin types, 74 (30.4%) had type II, 86 (35.4%) type III, 49 (20.2%) type I, 32 (13.2%) type IV and 2 (0.8%) type (Appendix 2).

Attitudes related to sun exposure

Exposure to sun radiation is mainly associated with being outdoors. Respondents were asked about time of the year, number of hours and type of activity during which they spent time outside. A hundred and one (41.6%) students declared spending time outside

throughout the year, 140 (57.6%) only in the summer and 2 (0.8%) only in the winter. Weekly most respondents (77 (31.7%)) spent from 5 to 10 h outdoors. Fifty-seven (23.5%) students answered that they spent outside up to 5 h and 49 (20.2%) from 10 to 15 h. Sixty students declared spending more hours outdoors – 24 (9.9%) from 15 to 20 h, 16 (6.6%) from 20 to 25 h, 6 (2.5%) from 25 to 30, 6 (2.5%) from 30 to 35 h and 8 (3.3%) over 35 h during a week. Two hundred and twenty-eight (93.8%) respondents spent their free time outdoors. A hundred and thirty-five (55.6%) students preferred exercising and 94 (38.7%) sunbathing. Other activities involved working ($n = 29$; 11.9%), walking ($n = 11$; 4.5%), sightseeing ($n = 3$; 1.2%), gardening ($n = 3$; 1.2%), learning ($n = 3$; 1.2%), walking the dog ($n = 2$; 0.8%), riding a bike ($n = 2$; 0.8%) and reading ($n = 2$; 0.8%). Two (0.8%) students declared avoiding sun exposure.

The use of tanning booths and sunburn

Forty (16.5%) of the surveyed students used tanning booths and 23 (9.5%) did it before the age of 18. Regarding the use of tanning booths, no statistically significant differences were found between the groups of medical and non-medical students ($p = 0.37$). Among all respondents, 178 (73.3%) got a sunburn in their childhood and 168 (69.1%) suffered sunburn later in life.

The use of sunscreen

A total of 208 (85.6%) used sunscreen in their childhood, 235 (96.7%) students reported using sunscreen currently. Women used sunscreen significantly ($p = 0.007$) more frequently than men (98.4% and 91.1%, respectively) (Figure 1).

A hundred and sixteen (47.7%) students used sunscreen only during summer holidays and 69 (28.4%) put on sunscreen during sunny days regardless of the season of the year. Forty-six (18.9%) respondents used this kind of photoprotection every day during the year. Eight (3.3%) students did not use sunscreen at all and 4 (1.7%) gave other responses – 2 (0.8%) used sunscreen in summer, late spring and early autumn, 2 (0.8%) only during hot and sunny weather, 1 (0.4%) only in countries with warmer climate (detailed data not shown).

When it comes to using sunscreen in the winter during sport activity, the respondents' answers were evenly distributed. During stay in the mountains in the winter, 83 (34.2%) respondents used sunscreen, 68 (28%) did not use sunscreen and 92 (37.9%) did not go to the mountains in the winter. Sunscreen was used by 59 (39.6%) medical students and 24 (25.3%) students of other faculties. Medical students used sunscreen in winter statistically more frequently ($p = 0.024$) comparing to students of other faculties.

A total of 159 (65.4%) students used sunscreen only once during sun exposure. Of them, 53 (21.8%) applied it

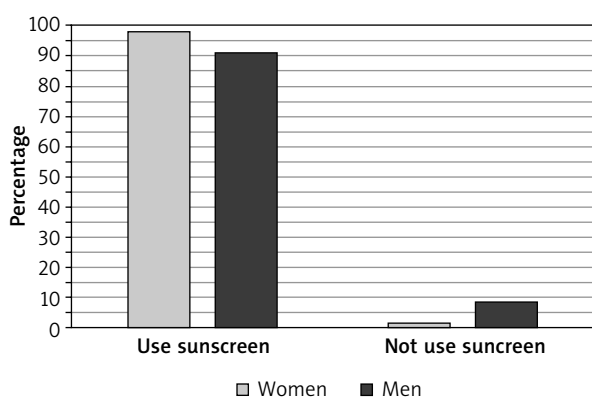


Figure 1. The use of sunscreen by the sex

15 to 30 min before exposure, 71 (29.2%) less than 15 min before exposure and 35 (14.4%) during sun exposure. Seventy-six (31.3%) respondents admitted to reapplying sunscreen products during the sun exposure. Eight (3.3%) did not use this kind of photoprotection at all. There was no significant difference between students of the medical faculty and other faculties regarding time of application of sunscreen before sun exposure and single or multiple application of the product ($p = 0.861$ and $p = 0.334$, respectively).

The most commonly used SPF value among sunscreen product users was 15–30 ($n = 110$; 45.3%), followed by SPF 30–50 ($n = 63$; 25.9%). Thirty-nine (16.1%) respondents used SPF > 50. Seventeen (7%) reported the use of sunscreen with SPF < 15. Six (2.5%) students gave other answers – they declared that SPF value that they use depends on the season, light intensity and part of the body (detailed data not shown). Students of the medical faculty used sunscreen with SPF > 30 statistically more frequently ($p = 0.009$) than students of other faculties (50.3% and 28.7%, respectively). Students used sunscreen on different parts of the body with different frequencies. A hundred and fifty-four (63.4%) respondents chose face, 114 (46.9%) exposed body parts and 97 (39.9%) neck. Other chosen body parts were arms (7 respondents (2.9%)), ears (5; 2.1%), mouth and back (4; 1.7% both), hands (3; 1.2%) and legs (2; 0.8%).

A hundred and ninety-four (79.8%) sunscreen product users bought their products mainly in drugstores. Pharmacies were chosen by 107 (44%) respondents. Thirteen (5.4%), students purchased sunscreen on the internet, 3 (1.2%) in supermarkets, 30 (12.4%) in other shops and 1 (0.4%) at the dermatologist's. Twelve (4.9%) people did not buy sunscreen themselves.

Among additional methods of sun protection, the most popular was use of sunglasses ($n = 201$; 82.7%) and a cap or hat ($n = 151$; 62.1%). A hundred and thirteen (46.5%) respondents declared that they avoid sun exposure around noon hours. Students of the medical faculty avoided sun exposure statistically more frequently ($p = 0.04$) than students of other faculties (51.7% and 38.3%, respectively). Thirty-seven (15.2%) students also indicated protective measures such as clothes with long sleeves and 6 (2.5%) used other like sunshades and beach slings. Ten people (4.1%) did not use other methods of photoprotection than sunscreen.

Dermoscopy examination

In the study group comprising 70 (28.8%) students, 54 (36.2%) students of the medical faculty and 16 (17%) of other faculties, underwent dermoscopy in the past. The difference was highly significant ($p = 0.001$). Thirty-six students underwent dermoscopy examination once, 18 twice, 5 people three and four times, 3 people five times, 1 person six times and 1 eight times.

Photoprotection in families of respondents

As many as 175 (72%) people indicated that their families used sunscreen. Thirty-seven (15.2%) respondents were convinced that their families did not use sunscreen and 31 (12.8%) did not know if this kind of sun protection was used.

Discussion

Photoprotection is the foundation of skin protection from harmful UV rays. As sun exposure is a modifiable factor, it is important to spread the knowledge how it affects the skin and how to guard from it. It is necessary to increase the knowledge about prevention from the sun exposure, especially among medical students, so they can promote healthy behaviours to their patients.

Awareness about sun protection has been increasing in recent years. In our study, we observed that at present students use sunscreen more often than in childhood. Additionally, we noticed that nowadays the percentage of sunburn is lower than in childhood. However, still, only 18.9% of students reported sunscreen use all year round. We observed that vast majority do it only during holidays or sunny days regardless of the season. Similar results have been indicated in other studies [8, 9].

Baykal Selcuk *et al.* [10] revealed that women protected themselves from the sun more than men. In line with this observation, we found that women use sunscreen statistically more frequently than men, what can be associated with a greater tendency to risky behaviour in young men. Similarly to the study of Urasaki *et al.* [9], in which they investigated sun protection habits in university students in Brazil, SPF 15–30 was the most commonly chosen one. Comparing to the Polish study of Laskowska and Reich [11], we observed a higher frequency of using sunscreen with SPF > 30 and in use of additional photoprotective methods especially in medical students. In our study students of the medical faculty used sunscreen with SPF > 30 more often than students of other faculties. Furthermore, we observed that both medical and non-medical students did not apply the sunscreen perfectly. The main problems concerned how much time should pass from application to the sun exposure and the fact that sunscreen was applied only once. Similarly, Nanyes *et al.* [12] emphasized that correct application of sunscreen was confusing for the medical students. Students did not know how to properly apply the sunscreen. In other studies the problem with reapplication was also reported [9, 13].

The research of Forsea *et al.* [8] analysed attitudes of medical students in Romania. They found out that most popular methods of photoprotection were avoiding sun exposure from 10 a.m. to 5 p.m. and wearing sunglasses. In our sample students of medical and non-medical faculties also willingly chose sunglasses, as well as hats or caps regardless of the field of the study. On the other

hand, in our study, the future healthcare professionals statistically more often avoided sunlight from 10 a.m. to 2 p.m. than the students of other faculties.

In our research we observed that 39.6% of medical students used sunscreen in the winter. It is a much higher percentage comparing to the study by Forsea *et al.* [8] who demonstrated that only 16.16% of respondents used it at that time of the year. This results may be partially related to the fact that most people have the wrong impression that sunlight is harmful only in summer which was described by Costa *et al.* [14]. On the other hand, it must be taken into consideration that the study by Forsea *et al.* [8] was published in 2012 and since then the general awareness about photoprotection has increased and knowledge on this subject has been disseminated by newer and newer/more and more media.

We found that medical students presented more awareness about photoprotection than students of other faculties. In contrast to our study, Isvy *et al.* [15] demonstrated that French sixth-year medical students' practices were almost the same as in the general population.

According to our data, 16.5% of students used tanning booths, of them 9.5% before the age of 18. Since 2017 in Poland using of tanning booths has been forbidden before that age [16]. As our results showed this restriction is very important because young people may be unaware of the harmful effects of ultraviolet radiation and do not know or care about future consequences related to the UV exposure. When we compared groups of medical and non-medical students there was no significant difference in frequency of using sun beds between them. Similar results were observed by Laskowska *et al.* [11]. Slightly better results were reported by Forsea *et al.* [8] in Romania (6.8%) and Dallazem *et al.* [17] in Brazil (5.4%).

We are aware that our study may carry a risk of bias due to the limited availability of the online survey. Although the survey was available to many student groups on Facebook, it excluded students unrelated to these groups as well as students not interested in the subject.

Conclusions

There are differences in pro-health attitudes regarding photoprotection between medical and non-medical students. Students of the medical faculty showed a greater awareness of the harmfulness of solar radiation, which was manifested in more frequent use of products with higher SPF, sunscreen use in the winter, as well as avoiding sun exposure around noon and undergoing dermoscopy examination. However, some practices associated with sunscreen application should be improved in both groups. Particular attention should be paid to reapplication and everyday use of sunscreen. Anyway, our study indicates that medical students may be involved in creation and promotion of education activities to the general public.

Conflict of interest

The authors declare no conflict of interest.

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Appendix 1

Internet groups where the questionnaire was made available:

Peer Support 2018/2019 IFMSA-Poland o. Wrocław <https://www.facebook.com/groups/241863259938466/>

Peer Support 2017/2018 IFMSA-Poland o. Wrocław

<https://www.facebook.com/groups/1891194511140921/>

Peer Support 2016/2017 IFMSA-Poland o. Wrocław <https://www.facebook.com/groups/1905174383043420/>

Peer Support 2015/2016 IFMSA-Poland o. Wrocław <https://www.facebook.com/groups/1035567726468431/>

Peer Support 2014/2015 IFMSA-Poland o. Wrocław

Lekarski 15/16 UMW <https://www.facebook.com/groups/703269516444114/>

Lekarski Katowice 2015 <https://www.facebook.com/groups/956912474367031/>

Lekarski 2013-2019 UMED Wrocław <https://www.facebook.com/groups/683667548327052/>

LEKARSKI 14/15 UMED WROC <https://www.facebook.com/groups/490101614468030/>

Politechnika Wroclawska <https://www.facebook.com/groups/politechnika.wroclawska/>

DS Riviera <https://www.facebook.com/groups/DSRiv/>

Studentki lekarskiego <https://www.facebook.com/groups/191291194996254/>

Appendix 2

The survey:

1. Sex
 - Male
 - Female
2. University affiliation
3. Faculty
4. Fitzpatrick skin phototype
 - I
 - II
 - III
 - IV
 - V
 - VI
5. Have you ever had dermoscopic examination?
 - Yes
 - No
6. If yes, how many times did you have dermatoscopy?
7. Have you been diagnosed with other skin cancers? If yes, what skin cancer has been diagnosed?
 - Yes
 - No
8. In which months do you mainly spend time outside?
 - Summer months
 - Winter months
 - All year
9. What activities do you choose when you are outside? (multiple choice)
 - Sport
 - Work
 - Sunbathing
 - Free time
 - Other
10. How many hours do you spend outside?
 - Up to 5 hours
 - 5–10 hours
 - 10–15 hours
 - 15–20 hours
 - 20–25 hours
 - 25–30 hours
 - 30–35 hours
 - Over 35 hours
11. Did you use sunscreen in childhood?
 - Yes
 - No
12. Were you sunburnt as a child?
 - Yes
 - No
13. Have you been sunburnt later in life?
 - Yes
 - No
14. Have you ever used sunbooths?
 - Yes
 - No
15. Did you use sunbooths before the age of 18?
 - Yes
 - No
16. Do you use sunscreen?
 - Yes
 - No
17. Where do you buy sunscreen? (multiple choice)
 - Pharmacy
 - Drugstore
 - Other store
 - Online (not pharmacy or drugstore website)
 - I don't buy sunscreen myself
 - Other
18. When do you use sunscreen?
 - Every day, all year
 - During sunny days
 - On holidays
 - I don't use sunscreen
 - Other
19. Do you use sunscreen during stay in the mountains in winter?
 - Yes
 - No
 - I don't go to the mountains
20. How do you apply sunscreen?
 - Once, up to 15 minutes before sun exposure
 - Once, from 15–30 minutes before exposure
 - Once, during sun exposure
 - More than once
21. What SPF do you use?
 - < 15
 - 15–30
 - > 30
 - > 50
 - Other ...
22. On which body parts do you usually use sunscreen every day? (multiple choice)
 - Face
 - Neck
 - Ears
 - Mouth
 - Hands
 - All exposed body parts
 - Other
23. Do you use additional sun protective methods? (multiple choice)
 - Hat/cap
 - Clothes with long sleeves
 - Avoiding sun exposure around noon hours
 - Sunglasses
 - Other
 - I don't use
24. Do your family members use sunscreen?
 - Yes
 - No
 - I don't know