Evaluation of the students' knowledge about sunbed and solar radiation

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ABSTRACT

Introduction: In Poland, the incidence of malignant melanoma increases each year.
Purpose: To assess the students' knowledge about sunbed use and side effect of solar radiation.
Materials and methods: The study was carried out among 577 students of the Medical University of Białystok based on a 'sunbed survey'.
Results: Of the 577 students, 390 (67.6%) had used a sunbed. Tanning 273 (70%) and preparation for sunny holidays 201 (51.6%) were the main reasons for sunbed use. Almost 61% of respondents were against the sunbed use by children or youths. SPF abbreviation was known by 64.4% of students. Most respondents 73.9% used the UVR-protection cosmetics in summer usually (66.9%). They avoided sun tanning between Noon - 15 o'clock (43.1%). Tanorexia as "an addiction to tanning" was defined by 27.4% of the respondents. The main sources of knowledge on sunbeds and side-effects of solar radiation were: magazines (34.6%) the Internet (29.5%) and TV (28.1%).
Conclusions: The students' knowledge about sunbed use and side-effect of solar radiation was varied. The majority of respondents knew that tanning to be a health risk, and they were against sunbeds could be used by children and youths. Most the surveyed did not know tanorexia term.
Key words: sunbed, solar radiation, students

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INTRODUCTION

Skin cancer is a common form of cancer in the World , accounting for half of all human cancers with over a million new cases diagnosed yearly [1,2]. Incidence and mortality of melanoma. In Poland and in other countries [3] the incidence of all types of skin cancer, including malignant melanoma, has been increasing since the 1980s. The incidence of melanoma (per 100 000) estimated to 3.3 for men and 3.1 for women in 1995 [4], 4.4 form men and for women 5.1 in 2002 [5]. Sunbed use represents a frequent source of artificial ultraviolet (UV) exposure in light-skinned population. Ninety percent of all skin cancers are due to ultraviolet radiation (UVR) [2]. Exposure to UVR radiation is a risk factor for skin cancers of all types, including malignant melanoma. The main source of UVR is the sun, but artificial light from sunbeds (solariums, sunlamps) also contains UVR. Several studies showed an increased risk for melanoma among persons first exposed to sunbeds before 30 years of age [6-8]. Indoor tanning was associated with female sex, age, sunbathing, smoking, and low perceived physical attractiveness. However, one Swedish study found indoor tanning to be related to moderately sensitive skin type (rather than greater tanning ability) among female adolescents [9].

Sunbed use among Polish adolescents has not been studied. To our knowledge, there is a lack of data with regard to the indoor tanning habits in Poland. We studied students' knowledge about sunbed and side- effects of solar radiation in the Medical University of Białystok, Poland.

MATERIALS AND METHODS

This study was based on a 'sunbed survey' conducted during four weeks in December 2009, with a sample of 577 students. The research was conducted among students of the Faculty of Health Prevention of the Medical University of Białystok in Poland. The students were drawn from the Nursing Divison Faculty N=602, which constituted 577 (95.8%). The mean age of the whole sample was 22.3 years; *SD*= 2.4 years, range 19-28 years.

Questionnaire

A structured questionnaire "sunbed survey" consisting of 36 items was used. This self-completed questionnaire had not been previously standardized or validated. Questions were generally close-ended in format. The 36-item questionnaire included demographic data (gender, age, place of residence) questions about reason for sunbed, exposure to artificial and natural UVR, knowledge about UVR exposure, skin type, tanning methods, hygiene in the tanning salons, sunbeds in children and youths, side effects of solar radiation, solar radiation protection, tanorexia, sources of knowledge on tanning. Data were collected during the students classess.

Data analysis

Statistical analysis was performed using Statistica 7.0 (Statsoft, Tulsa, USA). Distribution of data was graphically assessed. Analysis of data was performed using the Chi^2 test. A P value of < 0.05 was considered statistically significant.

RESULTS

Of the 577 respondents, 390 (67.6%) had used sunbeds. For the analysis we included sunbed users, 368 (94.4%) of women and 22 (5.6%) of men. Number of women differed significantly compared with men ($p<0.001$). Significantly ($p<0.001$) more often of the participants lived in the city 306 (78.5%) than in the village 84 (21.5%).

Reasons for sunbed

Regarding the reasons for sunbed tanning, the majority of respondents reported that they use sunbeds in order to get a tan 273 (70%) and to prepare their skin for sunny holidays 201 (51.6%). Concerning the positive effects experienced in sunbed use respondents mainly reported that improved appearance 234 (60%) and relaxation 187 (47.9%) were the main reasons why they use sunbeds.

Tanning safety

More than half of students (55.6%) were confirmed that sunbed is safe. Nearly half of the participants (42.8%) knew that sunbeds to be a health risk. The sunbed users believed that could control a safety tanning (5.3%), used UVR filters (2.6%), and they confirmed that dose of UVR is low (7.7%). The participants whose considered sunbeds to be a health risk, they knew that sunbeds can cause skin cancer (11.8%), changes to the skin (4.1%), dry skin (2.1%) or skin inflammatory (1.3%). Approximately (40%) of sunbed users could not demonstrate the arguments for safety tanning.

Frequency of tanning

No significant differences between the frequencies of attending sunbeds were found. The participants had used sunbeds several times a year 77 (19.7%), 2-3 times per month 63 (16.2%), once a month 55 (14.1%) or 1-2 times per week 50 (12.8%).

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Decision in using sunbed

Overall, 357 (91.5%) of students reported that it was their independent decision in using sunbeds. Nearly (36%) of the participants used sunbeds after the suggestion of friends.

Tanning methods

The surveyed students 316 (81%) more frequently ($p<0.001$) used sunbeds than sun tubes 49 (12.6%). And 25 (6.4%) of the participants used the both sunbeds and sun tubes.

Hygiene

Nearly 352 (90.3%) of the students could use paper towels in the tanning salons. By contrast, 38 (9.7%) of the participants could not use them. Of the surveyed, 347 (89%) had used cosmetics for skin care in the tanning salons. There was no cosmetics in the salons, was reported by 43 (11.02%) of the participants. The majority of participants reported that the staff clean sunbeds after each use (94.1%).

Safety

Most respondents (79.5%) knew that everyday tanning is forbidden ($p<0.001$). By contrast, only 8 (2.1%) of the participants expressed the opposite opinion. Of students surveyed, 72 (18.5%) did not have an opinion on this matter.

Sunbeds in children and youths

Significantly ($p<0.001$) more respondents 237 (60.8%) were against sunbeds using by children or youths compared with those who did not have an opinion 64 (16.4%) or 89 (22.8%) whose accepted it. Only 20.3% of respondents knew the correct duration of lamp work in tanning salons. Others 311 (79.7%) did not know the duration of lamp work. More than half of students (59%) were convinced that sunbeds are not safer than sunbathing. Only 17.7% of respondents expressed the opposite opinion.

Skin phototype

Definition of skin phototype was known by 195 (50%) of students. By contrast, 258 (66.2%) could not define the number of the skin phototypes. Significantly, ($p<0.001$) more students 242 (62.1%) knew that skin photype determines the duration of the first tanning compared with those who did not know 131 (33.6%), and who did not have an opinion 17 (4.4%).

Side effects of solar radiation

The surveyed students counted the following side-effects of solar radiation: skin cancer 170 (43.6%), sunburn 168 (43.1%), premature visible ageing of the skin 168 (43.1%), discolors 43(11%), skin allergy 22 (5.6%), dry skin 21 (5.4%), and sunny stroke 20 (5.1%).

Tannorexia and sources of knowledge on tanning

Tannorexia term – as an addition of tanning was known by 107 (27.4%) students, and 283 (72.6%) did not know it. The main sources of knowledge about sunbeds and solar radiation were: magazines -135 (34.6%), the Internet – 115 (29.5%), TV (110 – 28.2%), University – 81 (20.8%), text books 37 (9.5%), radio and tanning salon staff 15 (3.8%).

DISCUSSION

In the present study, students' knowledge on sunbed use and side-effect of solar radiation was varied. The majority of respondents knew that tanning to be a health risk, and they were against sunbeds could be use by children and youths. Most the surveyed did not know tanorexia term.

Direct comparison our results with previous studies about students' knowledge on sunbeds is impossible. Boldeman et al. [9] determined sunbed use in relation to phenotype, erythema, sunscreen use and skin disease in 1252 students. The study population comprised 14-19-year-old Stockholm adolescents. More than half of students (57%) reported sunbed use > or = 4 times during the previous year. Sunscreens were most commonly used by sunbed users. Of all sunbed users, 44% reported erythema. Adolescents with acne, eczema or psoriasis used sunbeds more than others without skin diseases. In contrast, all participants in our study used sunbed in order to get a tan and to prepare their skin for sunny holidays. In Danish study, Køster et al. [10] examined relations between sunbed use, outdoor tanning, knowledge about associated health risks and demographic factors in the population-based sample of 3437 persons aged 15-59 years. Within the past 12 months, 29% of all Danes aged 15-59 had used sunbeds, including 59% females aged 15-19, even though knowledge about the relation between exposure to UVR and cancer was more frequent in this group. A larger proportion of persons aged 15-18 had first used a sunbed before the age of 14 than older groups. Single males, frequent outdoor sunbathers, persons who experienced sunburns and less-educated persons were more likely to use sunbeds.

In German study, Dissel et al. [11] examined the prevalence of indoor tanning in North Rhine-Westphalia. During regular skin cancer screening campaigns 1242 subjects completed a structured questionnaire on constitutional parameters and indoor tanning habits. The regular sunbed user rate (more than 10 exposures/year) was 15.4% (191/1242). Most sunbed users were under 29 years of age. The number of female sunbed users was greater than the number of male users. Respondents with skin type III and IV used sunbeds

more frequently. Tanning and preparation for sunny holidays were the main reasons for sunbed use. The most frequently reported positive effects experienced by sunbed use were improved appearance and relaxation. Most respondents indicated that they hardly or never had sunburns following indoor tanning. Almost half of respondents considered radiation generated by sunbeds somewhat dangerous. These results are in accordance with our study.

Exposure to natural sunlight is associated with numerous harmful effects that are attributed to UVB and UVA radiation. The association found in previous studies between frequent indoor tanners and tobacco and another substance abuse also suggests that individuals who tan frequently may be susceptible to multiple addictive disorders [12, 13]. However, in the present study, we did not analyze the relationship between frequent tanning and tobacco and other substance abuse.

Previous investigations from other countries [14-17] found a significant influence of gender and age on sunbed use. The sex and age differences are likely, at least in part, a result of higher levels of appearance concern and cultural pressure to be attractive for young women. It is probably more socially acceptable for young females to seek such cosmetic treatments. These findings are in partially agreement with our report. Another interesting finding of the current study is that almost 43% of the respondents who used sunbed consider radiation generated by sunbeds to be a health risk. Previous reports have also shown that despite the awareness of certain health risks resulting from UV radiation, this knowledge hardly influence the behavior of indoor tanners [8, 14].

In a cross-sectional study De Vries et al. [18] conducted among 602 Belgian adolescents to analyse their sun protection habits. Of all respondents, 70% exposed themselves for at least three hours to the sun on sunny days. Most respondents (49%) exposed themselves between 12.00 and 15.00 h. Applying sunscreen every 2 h was the most commonly used method by adolescents to protect themselves, although 70% did not use sunscreen usually. Female students used sunscreen more regularly than male students. These findings are also partially in agreement with our study.

The limitations of the study include: the small size of this study group may not be generalizable to larger populations. There also may be self-report bias.

CONCLUSIONS

The students' knowledge about sunbed use and side-effect of solar radiation was varied. The majority of respondents knew that tanning to be a health risk, and they were against sunbeds could be used by children and youths. Most the surveyed did not know tanorexia term.

Conflicts of interest

We declare that we have no conflicts of interest.

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