SUN PROTECTION BEHAVIOR AMONG ADOLESCENTS
– A COMPARATIVE STUDY CONDUCTED IN 2008 AND 2012


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Summary
Introduction. Adolescents should limit their exposure to sun and apply sun protection measures. The purpose of this study was to establish changes in adolescents’ behavior regarding sun protection between years 2008 and 2012, as well as to assess the impact of sex and skin photo-type on behavior in order to suggest positive sun protection behavior practised in other countries and to improve educational program. Material and Methods. An original, tailor-made questionnaire (about the skin types, exposure to sun and the use of sunbeds) was distributed among 16 and 17-year-old students in high school in Belgrade, Serbia to be fulfilled within the framework of the educational project in 2008 and 2012. Data were analyzed by the Pearson’s chi square test and logistic regression analyses. Results. The total number of questionnaires completed in 2008 and in 2012 was 1,138 and 583, respectively. In 2012, the students spent less time outdoors. According to the 2008 survey, the girls used more sun protection measures, but reported more sunburns and the use of sunbeds than the boys. In 2012 more sunburns were reported by the boys as well as the increased use of the sunglasses, wearing a hat/cap and staying in the shade. Conclusion. There were statistically significant changes in behavior of adolescents regarding exposure to sun between 2008 and 2012, and between male and female gender. It is recommended to organize regular educational interventions at schools which should emphasize the following: the importance of sun protection measures, limited sunbathing and outdoor physical activities as well.

Key words: Surveys and Questionnaires; Sunburn; Health Knowledge, Attitudes, Practice; Adolescent Behavior; Skin Pigmentation; Ultraviolet Rays; Sunbathing; Sex Factors; Primary Prevention; Sun Protection Factor

Sažetak
Uvod. Adolescenti treba da ograniči vreme izlaganja suncu i primenjuju mere zaštite od sunca. Cilj ovog ispitivanja bio je da se utvrdje promene ponašanja adolescenata na suncu između 2008, 2012. godine, kao i da se proceni uticaj pola i fototipa kože na ponašanje, kako bi se predozvili pozitivni modeli ponašanja na suncu iz prakse drugih zemalja i poboljšao program edukacije. Materiał i metode. An original, tailor-made questionnaire (about the skin types, exposure to sun and the use of sunbed) was distributed among 16 and 17-year-old students in high school in Belgrade, Serbia to be fulfilled within the framework of the educational project in 2008 and 2012. Data were analyzed by the Pearson’s chi square test and logistic regression analyses. Rezultati. The total number of questionnaires completed in 2008 and in 2012 was 1,138 and 583, respectively. In 2012, students spent less time outdoors. According to the 2008 survey, the girls used more sun protection measures, but reported more sunburns and the use of sunbeds than the boys. In 2012 more sunburns were reported by the boys as well as the increased use of the sunglasses, wearing a hat/cap and staying in the shade. Zaključak. Oštećene su statistički značajne promene ponašanja adolescenata na suncu između 2008. i 2012. godine, kao i između muškog i ženskog pola. Ubuduće, potrebno je redovno organizovati edukacije u školama, a posebno treba naglasiti sledeće: značaj primene mera zaštite od sunca, ograničenog izlaganja suncu, ali i fizičkih aktivnosti na otvorenom/u prirodi.

Ključne reči: anketne i upitnice; opekotine od sunca; znanje o zdravlju, stavovi, praksa; adolescentsko ponašanje; pigmentacija kože; ultravioletni zraci; sunčanje; polni faktori; primarna prevencija; zaštitni faktor

Introduction
In the western societies, the past several decades were dedicated to beauty, well-being and pleasure - a reflection of that kind of life was, among other things, a tanned, sun kissed look. Although it has been well known for decades that too much exposure to sunlight and sunbathing can be harmful for the skin and the overall health, this fashion trend is still dominant in many societies. In addition to negative cultural trends, an increased number of skin cancers all over the world results from the environmental changes as well.

Acknowledgements
The authors would like to thank The Serbian Society for Fight Against Cancer for financial support and help in the organization and realization of the educational program, and Beiersdorf doo, Belgrade Representative Office for financial support.

Original study
Originalni naučni rad

DOI: 10.2298/MPNS1610281M
UDK 614.875:613.95
UDK 616.5-001.15-084-053.6

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Sun exposure is the major environmental risk factor for the development of both melanoma and non-melanoma skin cancers [1–3]. This risk depends on the individual’s characteristics - skin photo-type, genetics, age, sex, occupation, intermittent but not gradual exposure to sunlight, previous history of sunburns, total amount of time spent exposed to sunlight during life, especially during childhood and adolescence, etc. During recent decades, artificial sources of ultraviolet sun rays (UV) have become an important factor contributing to the total exposure of the skin, and the number of visits and time spent in sunbeds must also be taken into account when calculating the total risk of getting skin cancers.

Adolescents, as well as other subgroups under 18 years of age, are very susceptible to UV rays regardless of the source of emission (sunlight or sunbed) [4–7]. It is well known that children and adolescents spend more time outdoors than adults. About one fourth of total lifetime exposure to sun occurs at that time. Due to the cumulative effect of the sun, it is very important to limit sun exposure during the early period of life. This measure of sun protection could reduce the lifetime risk of developing skin cancers by as much as 78% [1, 8–11].

Unfortunately, adolescents are very receptive to negative cultural trends, media and peer influences related to sun exposure and tan as well [12]. They quite unconsciously adopt fashion trends as emanated by their idols and take practices of their elders in sun behavior. They find sun kissed look very attractive and healthy, which motivates them to go sunbathing and/or use sunbed mostly in springtime. With regard to sun protective measures, adolescents want to use them in their own way, respecting no rules or recommendations of the elders. When compared with younger children, adolescents use half amount of sunscreens, and incidence of sunburns is doubled. They deliberately delay the use of sunscreens, use low SPF sunscreens or expose themselves without protection, to get a tan [8, 13]. Some studies have demonstrated that sunbathing (outdoor or in sunbed) can provoke addiction, especially among girls in adolescent period [11, 12]. Aesthetic appearance, but not the health risks could be a reason for them to change the attitude and behavior toward the UV exposure and the tan [4, 14, 15].

It is rather difficult to make the adolescent population change their behavior patterns and thus it is a challenge for this kind of projects. Their attitudes toward tan, sunbathing and sun protection is difficult to change. Public health campaigns and educational interventions for under 18-year-olds in changing the level of knowledge and attitudes about skin cancer risk factors and sun protection have much better results among younger children than in the adolescents. It is difficult to transform the acquired knowledge and attitudes to sun smart behavior and to keep these changes for a longer period [5, 12].

Our first educational intervention “Sunbathing: Yes or No?” was held among first and second grade high-school students (16 and 17-year old) in Belgrade, Serbia in 2007 and 2008 [16]. At the beginning of the program, we applied original, tailor-made self-report multiple-choice questionnaire (“behavior test”) to make the assessment of adolescent population characteristics, attitudes and sun protection practices (skin photo-type, sun protection habits, use of sunscreens and sunbeds, etc.). To describe skin characteristics in the questionnaire, we used The Fitzpatrick Skin Type classification system (first developed in 1975 by Thomas Fitzpatrick), for skin photo-type category 1–3, and separate description of skin with many nevi for category 4.

In spring 2012 we carried out the same educational program for 16 and 17-year old students in high schools in Belgrade included in 2008 as well. We used the same questionnaires as in 2008 to investigate their attitudes and sun protection practices and behavior. This study compares the results of the 2008 and 2012 surveys.

The purposes of this study were to establish differences in students’ attitudes, sun protection practices and behavior in the 4-year period (2008–2012) and to assess the relation between sex and skin photo-type (hair and eye color and skin characteristics) and students’ sun protection behavior. This study was also aimed at finding out what corrections, if necessary, were to be made in our current educational programme for the students in high schools.

Material and Methods

The sun protection health promotion project “Sunbathing: Yes or No?” was implemented in Belgrade high schools by the Health&Beauty Care Center, Belgrade and Serbian Society for Fight against Cancer and under the patronage of the Ministry of Health of the Republic of Serbia [17] and the Ministry of Education and Sport of the Republic of Serbia [18].

The survey included the whole classes or even the whole generation (all classes in the same generation, depending on the organizational possibilities) of the first and second grade students in the selected schools in region of Belgrade. The same schools were included in the program in 2008 and in 2012.

The original, tailor-made, self-report multiple-choice questionnaires (about the skin types, behavior regarding the exposure to the sun and the use of sunbed) were distributed to 16 and 17-year-old students in the high-schools in Belgrade, Serbia.

After data collection, the results were entered into the database and analyzed, comparing answers in 2008 and in 2012 in order to establish the changes. Data from these tests for both years were analyzed by the Pearson’s chi square test and logistic regression analyses. We took into account the different number of the students in two cohorts. To
compare, analyze and present the 2008 and 2012 survey data, we used the statistical analysis similar to the method used by Gavin A, et al. [19].

**Results**

All P-values less than alpha=0.05 will be presented in boldface font (in the tables).

In this study, 1138 behavior tests were completed in 2008, and 583 in 2012.

In the 2008 sample, 65.2% were female respondents, and 34.8% were males. In the second survey sample, 49.56% were female respondents, and 50.44% were males. The majority of respondents in the 2008 sample were born in 1992 (45.5%) and 1991 (32.6%); whereas in the 2012 sample the majority of respondents were born in 1996 (52.3%) and 1995 (41.3%). Brown hair color and brown eyes were reported by the majority of respondents (55.98% in 2008 and 50.09% in 2012), and (47.1% in 2008, and 46.6% in 2012), respectively.

More than the half of the respondents in the 2008 sample (52.3%), mostly girls (P<0.001), spent “30% - 50% of their free time outdoors”. In 2012 the number of students who chose this answer declined (38.7%), and more students spent only “10% to 30% of their free time outdoors” (23% in 2008 and 35.7% in 2012, P<0.001) (Table 1). In 2012 there were no differences between males and females (P=0.323), but the comparison of the results for 2008 and 2012 showed that females spent more time outdoors (P<0.001), mostly 30 to 50% of their free time (34.64% females, and 16.06% males). The amount of free time spent outdoors reported in 2008 as compared with those from 2012 is related to the skin photo-type. The tendency to change the percentage of time spent outside is affected by skin characteristics, but not hair or eye colour (P<0.001) (Table 1).

In 2012, respondents were less likely to report “preparing the skin for the summer and gradual sunbathing” (41.51%) than in 2008 (57.93%), (P<0.001), but for “avoiding midday activities” differences were not statistically significant (P=0.404) and stayed at a low level – only 29.36% of students in 2008 and 27.67% in 2012 used this method of sun protection. Although participants in both years reported almost the same and fortunately small number of cases of “skin cancer in family history” (1.16% in 2008, and 0.88% in 2012, P=0.543), the problem is statistically significant increase (P=0.009) in “occurrence of sunburns”, from 44.11% in 2008 to 49.91% in 2012. From 2008 to 2012, the respondents were more likely to wear a hat (P=0.002), use sunglasses (P<0.001), or stay in the shade (P<0.001). No differences were found in the items “using sunscreens” (P=0.274) and “clothes to cover up the skin” (P=0.573), as measures of sun protection, between 2008 and 2012 survey. In addition, the number of sunbed uses remained at the similar level for 2008 (15.75%) and 2012 (14.01%), P=0.281.

In the 2008 survey, the female respondents were more likely to “avoid midday sun” (20.98% of females, and 8.39% of males, P<0.001), “gradually sunbathe” (43.81% of females and 14.12% of males, P<0.001), “wear a hat/cap” (19.70% of females and 12.50% of males, P<0.001), “use sunglasses” (31.45% of females and 12.64% of males, P<0.001), use “clothes to cover the skin” (1.05% of females and 0.88% of males, P=0.034), apply “sunscreens” (51.06% of females and 13.52% of males, P<0.001), and “stay in the shade” (21.95% of females and 20.51% of males). They reported more sunbed uses (14.91% of females and 0.4% of males, P<0.001), and

### Table 1. Percentage of free time spent outside, adjusted for students’ gender, hair and eye color and skin characteristics, 2008/2012

<table>
<thead>
<tr>
<th>Gender/Pol</th>
<th>Hair colour/Boja kose</th>
<th>Eye colour/Boja očiju</th>
<th>Skin Characteristics</th>
<th>Karakteristike kože</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>Light Brown Dark</td>
<td>Light Brown Dark</td>
<td>Cat. 1, 2, 3, 4</td>
<td>Cat. 1, 2, 3, 4</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ženski</td>
<td>Svetla</td>
<td>Svetla</td>
<td>Srednja, Tamna</td>
<td>Srednja, Tamna</td>
</tr>
<tr>
<td>Muški</td>
<td>Smeđa</td>
<td>Tamna</td>
<td>p-vrednost</td>
<td>p-vrednost</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percentage of time spent outside (%)</th>
<th>2008/2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vreme koje učenici provode napolju/u prirodi (%)</td>
<td>2008/2012</td>
</tr>
<tr>
<td>Up to 10%,</td>
<td>1.50</td>
</tr>
<tr>
<td>Do 10%</td>
<td>13.72</td>
</tr>
<tr>
<td>10–30%</td>
<td>34.64</td>
</tr>
<tr>
<td>30–50%</td>
<td>13.52</td>
</tr>
<tr>
<td>More than 50%</td>
<td>13.52</td>
</tr>
</tbody>
</table>

Legend - Skin characteristics (for all Tables):

Cat. 1 - light, sensitive skin, with freckles, easily burns but never tans; Cat. 2 - skin that moderately burns and moderately tans; Cat. 3 - skin that rarely burns and easily tans; Cat. 4 - skin with many nevi, new nevi and freckles appear after the summer season

Legenda - karakteristike kože (za sve tabele):

Kat. 1 – svetla, osetljiva koža, sa pegama, lako gori nikada ne tami; Kat. 2 – koža koja umereno gori i umereno tami; Kat. 3 – koža koja retko gori, a lako tami; Kat. 4 – koža sa puno mladeža, posle sezone sunčanja (leto), pojavljivaju se novi mladeži i pege.
Table 2. Sun protection practice and behavior (%), adjusted for gender, hair and eye color and skin characteristics, 2008/2012

<table>
<thead>
<tr>
<th>Question (%)</th>
<th>Gender/Pol</th>
<th>Hair color/Boja kose</th>
<th>Eye color/Boja očiju</th>
<th>Skin Characteristics/Karacteristike kože</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitanje (%)</td>
<td>2008/2012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoiding mid-day activities/Fezbeganje aktivnosti oko podneva</td>
<td>Female Male P-value</td>
<td>Light Brown Dark P-value</td>
<td>Light Brown Dark P-value</td>
<td>Cat. 1 Cat. 2 Cat. 3 Cat. 4 P-value</td>
</tr>
<tr>
<td>Gradual sunbathing/Postepeno sušćanje</td>
<td>20.14 9.02 &lt;0.001</td>
<td>4.02 16.69 8.45 0.195</td>
<td>8.41 13.23 7.53 0.194</td>
<td>2.30 14.38 12.14 0.35 0.002</td>
</tr>
<tr>
<td>Occurrence of sunburns/Učestalost opekotina</td>
<td>41.65 14.36 &lt;0.001</td>
<td>8.41 32.61 14.99 &lt;0.001</td>
<td>16.45 26.56 13.00 &lt;0.001</td>
<td>3.28 28.28 23.75 0.70 0.108</td>
</tr>
<tr>
<td>Using sunbeds/Korišćenje solarija</td>
<td>25.62 19.18 &lt;0.001</td>
<td>7.69 24.59 12.51 &lt;0.001</td>
<td>13.60 20.63 10.56 &lt;0.001</td>
<td>4.18 27.34 12.51 0.76 &lt;0.001</td>
</tr>
<tr>
<td>Skin cancer in family history/Rak kože u porodici</td>
<td>0.72 0.31 0.967 0.27 0.51 0.35 0.103 0.29 0.41 0.43 0.093 0.16 0.53 0.35 0.08 &lt;0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sun protection/Mere zaštite od sunca</td>
<td>19.05 13.90 &lt;0.001</td>
<td>4.00 19.30 9.66 0.002</td>
<td>9.06 15.61 8.29 0.781</td>
<td>2.36 17.45 12.84 0.31 &lt;0.001</td>
</tr>
<tr>
<td>Sunglasses/Snačare za sun</td>
<td>32.28 14.48 &lt;0.001</td>
<td>6.77 26.13 13.86 0.381</td>
<td>12.67 22.31 11.77 0.619</td>
<td>2.32 22.70 21.45 0.29 &lt;0.001</td>
</tr>
<tr>
<td>Clothes/Odeća</td>
<td>0.96 1.00 0.011</td>
<td>0.27 0.92 0.78 0.145</td>
<td>0.57 0.62 0.78 0.002</td>
<td>0.35 0.86 0.68 0.08 &lt;0.001</td>
</tr>
<tr>
<td>Sunscreen/Preparati za zaštitu od sunca</td>
<td>49.57 15.28 &lt;0.001</td>
<td>9.54 36.81 18.50 &lt;0.001</td>
<td>18.42 30.09 16.35 0.032</td>
<td>3.86 32.03 28.22 0.74 0.464</td>
</tr>
<tr>
<td>Stay in the shade/Boravak u hladu</td>
<td>22.76 22.81 &lt;0.001</td>
<td>6.54 24.02 15.01 0.002</td>
<td>12.31 21.49 11.77 0.970</td>
<td>2.95 24.71 17.47 0.43 &lt;0.001</td>
</tr>
</tbody>
</table>

Table 2. Navike i ponašanje na suncu (%), prema polu, boji kose i očiju i karakteristikama kože, 2008/2012.

In the 2012 survey, there were no significant differences between females and males (P=0.897) between the answers of the females and males (0.74% and 0.42%, respectively, P=0.857.

In the 2012 survey, there were no significant differences (P=0.897) between the answers of the female and male responses (13.84% and 13.84%, respectively) regarding avoiding of midday sun, and this behavior changed significantly compared with the data from 2008 (P<0.001), after adjustment for gender, hair and eye colour and skin characteristics (Table 2).

Sunburns were more often reported by the females (28.55% in 2012 and 13.52% in 2008), but for “number of skin cancer in family history”, there were no significant differences between females and males, i.e.(0.74% and 0.42%, respectively, P=0.857.

In the 2012 survey, there were no significant differences (P=0.897) between the answers of the female and male responses (13.84% and 13.84%, respectively) regarding avoiding of midday sun, and this behavior changed significantly compared with the data from 2008 (P<0.001), after adjustment for gender, hair and eye colour and skin characteristics (Table 2).

Sunburns were more often reported by the respondents who used sunscreens, in both years, of those with “skin that rarely burns, easily tans” (category 3) (OR 0.437, P<0.001). Similar results were observed in the 2012 survey: sunburns occurred in 26.99% of responses with the “skin that moderately burns, moderately tans” (category 2), in comparison to 12.96% of those with “the skin that rarely burns, easily tans” (category 3) (OR 0.437, P<0.001). After adjustment for gender, hair and eye colour and skin characteristics, the results for the 2008/2012 survey show significant differences (OR=0.428 and P<0.001).

The majority of respondents who used sunscreens chose sun protection factor (SPF) = 15–30. Of respondents who reported using sunscreens, in both years, those who chose SPF=15–30 (57.7% in 2008 and 51.34% in 2012) prevailed. In 2012 the percentage of
Skin Characteristics

Eye color/Boja očiju

Table 3. Annual number of uses of sunbed (%), adjusted for gender, hair and eye color and skin characteristics, 2008/2012.

<table>
<thead>
<tr>
<th>Annual number of sunbed uses (%)</th>
<th>2008/2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broj poseta solarijuma godišnje (%)</td>
<td>2008/2012</td>
</tr>
<tr>
<td>Gender/Pol</td>
<td>Hair color/Boja kose</td>
</tr>
<tr>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>Ženski</td>
<td>Muški</td>
</tr>
<tr>
<td>Up to 10</td>
<td>Do 10</td>
</tr>
<tr>
<td>10-20</td>
<td>35.03</td>
</tr>
<tr>
<td>More than 20</td>
<td>Više od 20</td>
</tr>
</tbody>
</table>

respondents who opted for SPF>30 rose (from 32.84% in 2008 to 38.77% in 2012), but with no statistical significance (P=0.054). There were significant differences between the male and female users (P<0.001 in 2008 and P=0.008 in 2012) and between the years of survey (P<0.001). Sunscreens with SPF=15-30 were used by 46.98% of female respondents and 10.71% of males in 2008 and by 29.41% of females and 21.93% of males in 2012. In 2012, the percentage of girls using SPF > 30 was lower than in 2008, being 20.59% and 24.63%, respectively.

On the contrary, the boys used more sunscreens with SPF>30 in 2012 than in 2008 (18.8% and 8.21%, respectively). According to the skin characteristics, the majority of those who used sunscreens were the respondents with category 2 skin, and they used mostly SPF=15-in both years (28.39% in 2008 and 28.88% in 2012).

As for the number of sunbed uses, there were some differences between the male and female respondents in the two surveys. In 2008, 14.91% of girls and 0.84% of boys used sunbeds (P<0.001), and there were no significant differences concerning the data from 2012 (P=0.281): 12.26% of girls and 28.88% in 2012). In 2008, 43.83% of those who reported using sunbeds, went there up to 10 times that year, whereas 48% used sunbed 10-20 times in 2012, thus P=0.047 for 2008/2012. The number of sunbed uses depended on the skin characteristics as well (P=0.032) (Table 3).

Discussion

During the past decades, the Serbian population received a lot of information about sun protection and skin cancer prevention through the media, which greatly influenced public knowledge and behavior. As well as in many countries in the world, the key messages for the population in Serbia were to avoid mid-day sun, to prepare the skin before summer by gradual sunbathing and to use sun protection measures – to wear a hat/cap, use sunscreens, cover the skin by clothes, use sunglasses and stay in the shade [19–21].

In Serbia, there were no broad campaigns or educational programs focused on sun protection among adolescents, so information distributed by media was very important for young people in adolescent period, too. Although the adolescents were very interested in fashion trends and sun-kissed look, they were also receptive to information and open to changes in attitude and behavior towards the sun, like their peers in other countries [22]. However, during the past several years, mass media in Serbia paid much more attention to different health care topics, and sun protection promotion was pushed back. In addition, since 2008, media attention has been focused mostly on global economic crisis and its consequences at the local level, so the public health campaigns have become less prominent. The lack of information probably had an influence on behavior and sun protection practice among students’, as shown by this investigation, the first one dealing with these issues in Serbia.

In 2012, the students spent less time outdoors than in 2008. This seems positive in relation to the sun protection and sun burns prevention, but it also raises concerns if they spent less time in the sports activities, in the fresh air, and (probably) among peers and friends. Besides, this change in the behavior could provoke a new problem – vitamin D deficiency, so in our future program the students should be informed about the importance of vitamin D for health, and sunbathing time optimal to produce enough vitamin D without getting sunburns. The participants have recently shown the tendency to spoil their previous positive practice to prepare the skin for summer by gradual sunbathing, and this should be the subject for the future educational interventions among adolescents and/or public health campaigns. It is also necessary to stress the importance of avoiding midday sun and increased use of all sun protection measures since it is a way to prevent sun burns and skin cancer development. Creating the school curricula and sports activities schedule early in the morning or later in the afternoon could become regular schools’ practice since this measure has given good results elsewhere [23, 24].

In our first survey, the girls were more conscientious than the boys in adopting and applying sun protection measures, but they used sunbed much more frequently than the boys and got sunburns more often.
In 2012, the boys reported more sunburns. In spite of all activities aimed at raising the awareness of young people regarding the dangerous effects of exposure to sun, the sunburn prevalence among adolescents was higher in the recent years, which is very worrying. Long-term health risks associated with the sunburn in the childhood should be strongly emphasized in future educational interventions in schools, as well as in the media [8, 19, 20, 25].

It is encouraging that participants, particularly boys, have recently increased the use of some sun protection measures, such as wearing hat/cap, using sunglasses and staying in shade (that became the most common method of sun protection in recent years, particularly among boys). In future campaigns, more attention should be paid to using clothes to cover up and protect the skin from UV rays. In accordance with other findings [8, 9], the sunscreens have been one of the most common methods of sun protection among adolescents despite the recommendations that it should be only adjunct supplement to other forms of protection. SPF 15-30 was the dominant choice in sunscreens use in these surveys, that being similar to other studies [26]. Anyway, sun protection products with SPF>30 gradually gained the position in sun care practice of adolescents. Although some previous studies have found that adolescents deliberately use sunscreens with low SPF, it seems that in Serbia advertising campaigns of cosmetic companies which produce the sunscreens and recommend sunscreens with higher SPF, are very influential and/or that perceived social norms within the peer group have changed [8].

Obviously, the adolescents, particularly girls are still interested in using sunbeds, as shown in other studies [9, 27], which is a serious problem in Serbia. Because of the absence of any relevant legislation or regular inspection of the equipment performances, or application of supposedly mandatory preventive measures whenever the use of sunbeds is concerned, the health promotion regarding sun protection and using sunbeds is going to be a burning issue that so far has failed to draw appropriate attention of either medical or general public in Serbia.

Limitations of the study are the results based on the students’ self-reports.

Conclusion

Due to the absence of appropriate educational programs in schools, the sun protection attitude and behavior among the high school students are affected and created by information distributed by media, fashion trends and peer influences. In order to keep positive trends in behavior regarding sun protection, our future educational interventions for the adolescents should be regular and focused on highlighting the following: the importance of limited exposure to sun, avoiding midday sun outdoor activities and the adoption and application of all sun protection measures. In addition, it should be emphasized that avoidance of the midday sun outdoor activities does not exclude outdoor activities but just that the regular physical activities outdoors should be planned before 10 a.m. and after 4 p.m., especially because the exposure to sun is important, particularly for children and young people, for the synthesis of vitamin D in the skin, which is necessary for the growth and development.

References


