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The connection of the family's socioeconomic status and consumption of cigarettes, alcohol and marijuana in adolescents of the Brčko District of Bosnia and Herzegovina

Повезаност социоекономског статуса породице и конзумације дувана,
алкохола и марихуане код адолесцената
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Accessory spleen diagnostic hidden, laparoscopic removal – case report and review of the literature

Акцесорна слезина дијагностички непрепозната, лапароскопски уклоњена – приказ болесника и преглед литературе

SUMMARY

Introduction/Objective The objective of this paper was to determine the connection between the socioeconomic status (SES) of the respondents and smoking cigarettes, alcohol and marijuana use. Is there a connection between the SES respondents and their gender and place of residence?

Methods In a cross-sectional study based on The European School Survey Project on Alcohol and Other Drugs questionnaire (ESPAD), adapted to this research, a total of 4188 primary and secondary school respondents from Brčko District of Bosna and Herzegovina participated. The data was collected using questionnaire prepared for each respondent. Data on gender, marital status, occupation and professional qualifications of parents were used to determine a family's SES according to the Hollingshead methodology.

Results Alcohol and marijuana use are in relation to SES respondents ($p < 0.001$ or $p = 0.008$): respondents living in low-SES families use alcohol or marijuana at a lower percentage than respondents from middle-SES or high-SES families. Smoking habits are not in relation to SES respondents ($p = 0.678$). The place of residence is connected with SES respondents ($p < 0.001$): more respondents from low-SES families live in the rural areas, as those from medium-SES and high SES families who in the majority live in the urban.

Conclusion The SES of the respondents is in relation to the place of residence, alcohol and marijuana use, but it is not related to cigarette smoking.

Keywords: SES; alcohol; cigarettes; marijuana, rural; urban

САЖЕТАК

Увод/Циљ Циљ рада био је утврдити повезаност СЕС (социокономски статус) испитаника и пушења цигарета дувана, пијења алкохола и конзумације марихуане. Утврдити да ли постоји повезаност СЕС испитаника и његовог пола и места становања.

Метод У пресјечној студији, заснованој на ЕСПАД-ову упитнику (*European School Survey Project on Alcohol and Other Drugs*) прилагођеном овом истраживању, учествовало је 4188 испитаника основних и средњих школа. Подаци су прикупљени помоћу упитника припремљених за сваког испитаника. Подаци о полу, брачном статусу, занимању и стручној спреми родитеља су кориштени за одређивање СЕС по Холингсхед методологији.

Резултати Пијење алкохола и конзумација марихуане је у релацији са СЕС испитаника ($p < 0,001$ односно $p = 0,008$): испитаници који живе у породицама са ниским СЕС, конзумирају алкохол односно марихуану у мањем проценту него испитаници из породице са средњим или високим СЕС. Пушачке навике нису у релацији са СЕС испитаника ($p = 0,678$). Место становања је повезано са СЕС испитаника ($p < 0,001$): испитаници у породици са ниским СЕС који пуше цигарете дувана, пију алкохол и конзумирају марихуану живе на селу, док испитаници са средњим и високим СЕС живе у граду ($p < 0,001$).

Закључак СЕС испитаника је у релацији са местом становања, пијењем алкохола и конзумацијом марихуане, али није у релацији са пушењем цигарета дувана.

Кључне речи: СЕС; алкохол; цигарете; марихуана; село; град

INTRODUCTION

The role of the family in the upbringing of children is of great importance in adolescence, because it is a period characterized by intense physiological changes of adolescents manifested by behavioral changes, as well as by their propensity to experiment with illicit substances such as cigarette smoking, alcohol drinking and drug use [1].

The impact of the family's SES on the health habits of adolescents is the subject of ongoing research by scientists and health policy makers, as they have a major impact on their future psychophysical development [1–5]. According to research, available in literature, adolescents living in low-SES families tend to be prone to risky and unhealthy behaviors, including the cigarettes, alcohol and marijuana use [3, 6]. A frequent link is between the family's SES of adolescents and cigarette smoking, which shows that adolescents from a low-SES families more often often smoke cigarettes [4, 7, 8]. Drinking alcohol is in great correlation with the family's SES of adolescents, where adolescents from a high-SES families more often drink alcohol [9, 10]. It is enough for adolescent who comes from a low-SES family to move in the company of his/her peers who come from a high-SES families to start frequently overusing alcohol [9, 10].

Most researches show a strong link between marijuana use by adolescents and school dropouts [4, 11], taking into account the fact that low SES has [11, 12] also a great influence on it. The attitude of the experts prevails that SES plays an important role in the development of adolescents, and therefore also on the adolescent's decision to start consuming some of the dangerous and illicit substances [13, 14]. Contrary to those attitudes, there are allegations that the link between SES and the cigarettes, alcohol and illicit drugs use has not been fully clarified and that the family's SES and behavior of their members cannot be verified with certainty [5, 6].

The objective of this paper is to determine the connection of SES respondents and cigarette, alcohol and marijuana use. Is there a connection between the SES respondents and their sex and place of residence?

METHODS

Research area

The Brčko District of Bosnia and Herzegovina (Figure 1) covers an area of 493.3 km² where in 2013 a total of 83516 inhabitants lived with an average population density of 169 inhabitants per square kilometer [15].

Respondents

It was planned by this research to include all 4676 pupils from nine grades of elementary schools and all secondary school students in the Brčko District. Out of that number, 1016 were 9th grade students from 12 elementary schools and 3660 students from four high schools. 4188 i.e. 89.6% of students were surveyed.

Methods

The research was designed as a cross-sectional study and was carried out using the European school survey project on alcohol and other drugs questionnaire (ESPAD) [16] adapted for this research and translated into the official languages of BiH. This questionnaire was created by a group of experts from the European Monitoring Center for Drugs and Drug Addiction (EMCDDA) and the Pompidou Group, set up by the Council of Europe with the aim of comparing and analyzing the results of research on the consumption of cigarettes and substance abuse in different countries. The questionnaire contains 45 questions, which are divided into appropriate thematic units.

Demographic data for each adolescent that contained gender, place of residence, marital status of parents, professional qualification and parents' occupation were collected using a unique questionnaire prepared for this research. Sex, marital status, occupation, and professional qualification were used to determine the family's SES according to the methodology prescribed by Hollingshead [17]. According to this methodology, the minimum number of points determined by the SES is 8, and the maximum number of points is 66. According to the number of points family's SES is classified into a low SES (8-27), medium SES (28-47) and high SES (46-66).

After the prior approval of the school directors, the examination was conducted in the school year 2011/2012 in one school class in the period from October 20 to November 28, 2011. The students themselves filled out the questionnaires with a previous explanation of the person who was specially trained to fill in the questionnaire. The person who supervised the examination provided assistance to students in completing the questionnaire in the sense of explaining the question, but did not affect the final answer. After completing the questionnaire, students placed them in an envelope they pasted and handed over to the person

who supervised the examination. Adolescents' answers from the filled in questionnaires needed for the following questions were used for this article: "Have you ever smoked cigarettes, drank alcohol or marijuana use?" Place of residence, education of parents, and what is their occupation and marital status.

Prior to the research, parents of the respondents have been given informed consent where the manner and the purpose of the research were described by the ESPAD methodology. This methodology does not provide imperative approval of the Ethics Committee. This research was done in accordance of the Helsinki declaration.

Statistical analysis

The frequency of individual answers to the questions posed in the questionnaire was presented as absolute and relative frequencies. The difference between the observed and the expected frequencies was assessed with a chi-squared test. Statistical significance was confirmed at $p < 0.05$. We used statistical software SPSS 20 (SPSS Inc., Chicago, Illinois, USA) for data processing.

Respondents volunteered to anonymously fill in the questionnaires after being informed that the results obtained will be used exclusively for scientific purposes. The respondent does not enter his or her first and last name when fill in the questionnaire.

RESULTS

Of the 4188 respondents who were surveyed, 4084 filled out gender data, of which 2013 (49.3%) were boys and 2071 (50.7%) were girls. The family's SES in relation to gender was calculated on sample of 4078 respondents, and the family's SES in regarding the place of residence was calculated on a sample of 4056 respondents. The families' SES of respondents in the Brčko District in relation to their gender and place of residence is shown in Table 1.

The results showed that the most number of adolescents live in low-SES families i.e. 1991 (48.8%), 1749 of adolescents (42.9%) live in medium-SES families, and the least number of adolescents 338 (8.3%) live in a high-SES family. The difference in the

distribution of male adolescents and female adolescents in relation to their families' SES categories is not statistically significant, which means that we cannot confirm the connection between the gender of the respondents and their families' SES ($p = 0.747$). The adolescent's residence is statistically significantly related to the family's SES of respondents ($p < 0.001$) and the results show that low SES respondents most often live in the rural (68.7%, 1355/1973) compared to respondents from medium and high-SES families who most often live in the urban (54.2%, 946/1745, $p < 0.001$ and 76.9%, 260/338, $p < 0.001$). The family's SES of adolescent smokers and non-smokers shown in Table 2.

The answer to the question about smoking was given by 4065 respondents, taking into account that more respondents stated that they never smoked cigarettes (57.2%) compared to those who did smoke (42.8%). Comparing the results of the family's SES of adolescent smokers and non-smokers, we have established that the family's SES of adolescents is not related to their smoking habits ($p = 0.678$). The family's SES of adolescent smokers in relation to their gender and place of residence are shown in Table 3.

Analyzing the influence of the family's SES of respondents on smoking habits of male and female adolescents, we found that their families' SES is not related to the gender of the smokers ($p = 0.575$). The family's SES of smokers is statistically significantly related to the place of residence ($p < 0.001$). The results obtained show that smokers from low-SES family are more likely to live in rural areas (70.2%, 592/843) in relation to their peers from a medium-SES family (50.9%, 374/735, $p < 0.001$) as well as in relation to peers from the high-SES family that most often live in the urban (76.1%, 105/138, $p < 0.001$). The family's SES of adolescents who drink alcohol in relation to those who do not drink shown in Table 4.

The answer to the question about alcohol consumption was given by 3990 respondents, where most respondents drank alcohol (59%) in relation to those who never drank it (41%). There is a statistically significant connection between family's SES and alcohol consumption ($p < 0.001$). Respondents coming from a low-SES family drink alcohol at a lower percentage (55.2%, 1071/1940) than respondents from medium-SES (62.4%, 1072/1717, $p < 0.001$) and high-SES families (63.1%, 210/333, $p = 0.009$). The difference in the frequency of alcohol consumption between medium-SES family respondents and high-SES family respondents was not statistically significant (62.4% and 63.1%, $p = 0.877$). The family's SES of adolescents who consume alcohol in relation to their gender and place of residence are shown in Table 5.

Comparing the families' SES and gender of alcohol drinking respondents, we found that male and female adolescents drink alcohol regardless of their familie's SES ($p = 0.972$). Analyzing the familie's SES of alcohol drinking respondents in relation to the place of residence, we found that the SES of the respondents and the place of residence were statistically significantly related ($p < 0.001$). The results show that alcohol drinking respondents from low-SES families most often live in the rural (69.1%, 723/1046) compared to respondents who come from the medium-SES and high-SES families who live most often in the urban (52.8%, 560/1060, $p < 0.001$, or 75.1%, 157/209, $p < 0.001$). The family's SES of adolescents who marijuana use in relation to those who do not smoke shown in Table 6.

The answer to whether they smoke marijuana or not was given by 4058 respondents, out of which the vast majority never smoked marijuana 3791 (93.4%), while only 267 (6.6%) said they smoked marijuana. The results show that family's SES of respondents is statistically significantly related to smoking marijuana ($p = 0.008$). The majority of those who smoke marijuana live in medium-SES families (45.3%), 41.9% in low-SES families, and 12.7% in high-SES families. Respondents coming from a low-SES family have been smoking marijuana at 5.7% (112/1974), which is a smaller percentage compared to marijuana smoking respondents coming from a middle-SES (6.9%, 121/1747) or high-SES family (10.2%, 34/337, $p = 0.028$). The family's SES of adolescents who consume marijuana in relation to their gender and place of residence is shown in Table 7.

Analyzing the results of marijuana use, we found that, regardless of the fact that men more often marijuana use ($p < 0.001$), the family's SES of those consuming marijuana is not related to gender ($p = 0.633$). The results of marijuana use, taking into account the family's SES of respondents in relation to their place of residence, show that family's SES is statistically significantly related to the place of residence ($p < 0.001$). We found that respondents, who marijuana use, coming from low-SES families most often live in the rural (59.6%, 65/109), and, contrary to them, their peers who come from the medium and high-SES family mostly live in the urban (58.3%, 70/120, $p = 0.010$, and 78.8%, 26/33, $p < 0.001$).

DISCUSSION

The results obtained by this research show the connection of family's SES with alcohol and the marijuana use, but not the connection of the family's SES with smoking cigarettes.

Connection between SES and cigarette smoking in developed countries according to Doku et al. [18] is exclusively related to low SES, while in developing countries there is not enough relevant research to indicate the connection of SES and cigarette smoking [8, 13]. By reviewing the available literature, we did not find results that would coincide with the results of our research. The reason for this huge difference between our results and those from the literature regarding the connection between cigarette smoking and SES can be explained by different methods of determining SES. In our research, for the assessment of the family's SES, we used the Hollingshead methodology [17] that includes the factor of education, gender, occupation and marital status of parents, while other authors in the literature, in addition to these, also used psychosocial factors such as: psychological factors, cultural factors, peer influence on smoking habits, parents' relationship, smoking cigarettes tolerance in the family, and the attitude of society towards smoking cigarettes [19, 20].

Cigarette smoking is often a symbol of maturity and growth, so the tolerance to this phenomenon is very high, and as a result, we have a great deal of cigarette availability at every step. Due to the attitude of society towards cigarette smoking, there is no social awareness of the harmful effects of smoking on people's health and there is no social condemnation of such behavior [20]. All of the above can be an important cause of the lack of connection between smoking and SES, which should be scientifically determined by a new research.

Our results regarding the connection of alcohol and marijuana use with high SES corresponds with the results of most authors [9, 11, 21]. The reason alcohol drinking and the marijuana use are associated with adolescents from richer families lies in the fact that these substances are expensive and require more money to be purchased, which can only afford adolescents from a high-SES family [6, 22]. Alcohol and marijuana cannot be consumed in every place as compared to cigarettes, but they have to go to cafes or disco clubs for which it is necessary to have more money. Access of adolescents to these places is a sign of insufficient care for parents about their children's leisure activities who spend most of their time in a company that is prone to risky behavior.

Investigating the connection between risky behavior and consumption of illicit substances in relation to place of residence and SES, we have identified different behavior of adolescents from the rural compared to those from the urban. Namely, adolescents from low-SES families who smoke, drink and consume marijuana live in the rural at a higher

percentage, while respondents from medium-SES and high-SES families who consume these substances live in the urban at a higher percentage. Our results on the connection of the use of psychoactive substances with the SES families living in rural areas are consistent with the results of the authors from the USA, where respondents from low-SES families living in rural areas smoke, drink and marijuana use to a much larger extent than peers living in medium-SES and high-SES families [23]. The reasons for this behavior of the rural population have not been clarified, but the literature published in the United States offers reasons that can influence this connection of SES and risk behavior [23]. The reasons explaining this phenomenon in the rural population, which we can apply to our research, are: high unemployment of the young population, and those who are employed are working a difficult low-paid job, and thus the majority of the population lives in poverty. Due to traffic isolation in the rural areas there is poorly organized education, poor health care, as well as conservative living standards with a slow change in life habits [23, 24, 25]. The traditional brandy production in the rural areas district of Brcko allows adolescent drinking alcohol without sanctions. These are the reasons why residents of the rural find it difficult to stop smoking cigarettes and drinking alcohol, and those who try to stop in large percentage give up their intention. Poor success in achieving a complete abstinence of smoking and drinking alcohol lies in the fact that cigarettes and alcohol are widely available at home, as they are part of everyday rural cultural rituals. Marijuana use among the rural population is a "logical sequence" of searching for a stronger psychoactive substance by which the adolescent will "kill the boredom" [25]. The reasons why adolescents from rural areas coming from medium-SES and high-SES families do not consume these substances at a significant percentage are not explained, and that should be the subject of special research.

However, good socioeconomic opportunities are a risk factor, which will cause adolescents from the urban to consume cigarettes, alcohol and marijuana. The model elaborated by Hollingshead is not sufficient to give an adequate response to this behavior of adolescents from the urban, but it is also necessary to include consideration of other factors [8]. This means that in addition to the basic parameters, it is necessary to include parameters of a sociological nature, such as a busy way of life, a lack of free time for parents, a constant search for additional income to meet the needs of urban life [25]. A busy way of life and a great deal of demands from people to spend most of their time at work, adolescents remain without parental control and care. Because of the alienation of parents and children, the children lose confidence in them, they withdraw to themselves, and communicate with their

parents only when they need money. These are the possible reasons why adolescents from the urban who come from middle-SES and high-SES families more often smoke than those who come from low-SES families.

For the urban environment, it is characteristic that adolescents from the urban who come from low-SES families and have friends who come from high-SES families consume cigarettes alcohol and marijuana as equally as they do or deal with some other illicit activities.

The disadvantage of this research is that the data on which SES calculation was made was obtained by a statement from adolescents without verifying their truthfulness. One of the limiting factors is that there are no pre-defined rules for the rural-urban definition, but the respondents themselves decided whether the place they live in is a rural or a urban. In future research it is necessary to expand the parameters for determining SES, i.e. in addition to the parameters used in the Hollingshead methodology, psychosocial parameters should also be included.

Conclusion

The family's SES of adolescents of the Brčko District is connected with the consumption of alcohol and marijuana but it is not connected with cigarette smoking. Gender of respondents and cigarettes, alcohol and marijuana use are not related to the family's SES of respondents. The place of residence and cigarettes, alcohol and marijuana use are connected to the family's SES of respondents, in such a way that respondents from rural from low-SES families are consuming these substances more frequently, while adolescents from middle-SES or high-SES families consume it in the urban.

NOTE

This paper is a part of the master thesis by Anto Domić, titled “The use alcohol, cigarettes and illegal substances among adolescents of Brčko distrikt of Bosnia and Herzegovina.”

Conflict of interest: None declared.

Paper accepted

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Table 1. The family's SES of respondents in the Brčko District according to their sex and place of residence

Variables	SES			
	Total n (%)	Low n (%)	Medium n (%)	High n (%)
Sex ¹				
Male	2009 (49.3)	993 (49.4)	851 (42.4)	165 (8.2)
Female	2069 (50.7)	998 (48.2)	898 (43.4)	173 (8.4)
Total n (%)	4078 (100)	1991 (48.8)	1749 (42.9)	338 (8.3)
Place of residence ²				
Rural	2232 (55)	1355 (60.7)	799 (35.8)	78 (3.5)
Urban	1824 (45)	618 (33.9)	946 (51.9)	260 (14.3)
Total n (%)	4056 (100)	1973 (48.7)	1745 (43)	338 (8.3)

SES = socioeconomic status;

¹p = 0.747 (SES by gender);²p < 0.001 (SES by place of residence)

Table 2. The family's SES of adolescent smokers and non-smoker

Smoking ¹	Total n (%)	SES		
		Low n (%)	Medium n (%)	High n (%)
Yes	1740 (42.8)	860 (49.4)	741 (42.6)	139 (8)
No	2325 (57.2)	1119 (48.1)	1009 (43.4)	197 (8.5)
Total n (%)	4065 (100)	1979 (48.7)	1750 (43)	336 (8.3)

SES = socioeconomic status;

¹p = 0.678 (SES by smoking)

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Table 3. The family's SES of adolescent smokers in relation to their sex and place of residence

Variables	Total n (%)	SES		
		Low n (%)	Medium n (%)	High n (%)
Sex ¹				
Male	885 (51.4)	436 (49.3)	372 (42)	77 (8.7)
Female	836 (48.6)	411 (49.2)	364 (43.5)	62 (7.3)
Total n (%)	1721 (100)	847 (49.2)	737 (42.8)	138 (8)
Place of residence ²				
Rural	999 (58.1)	592 (59.3)	374 (37.4)	33 (3.3)
Urban	717 (41.9)	251 (35)	361 (50.4)	105 (14.6)
Total n (%)	1716 (100)	843 (49.1)	735 (42.8)	138 (8)

SES – socioeconomic status;

¹p = 0.575 (SES by sex);

²p < 0.001 (SES by place of residence)

Table 4. The family's SES of adolescents who drink alcohol in relation to those who do not drink

Alcohol drinking ¹	Total n (%)	SES		
		Low n (%)	Medium n (%)	High n (%)
Yes	2353 (59)	1071 (45.5)	1072 (45.6)	210 (8.9)
No	1637 (41)	869 (53.1)	645 (39.4)	123 (7.5)
Total n (%)	3990 (100)	1940 (48.6)	1717 (43)	333 (8.3)

SES – socioeconomic status;

¹p < 0.001 (SES by alcohol drinking)

Table 5. The family's SES of adolescents who consume alcohol in relation to their gender and place of residence

Variables	Total n (%)	SES		
		Low n (%)	Medium n (%)	High n (%)
Sex ¹				
Male	1240 (53.3)	565 (45.6)	565 (45.6)	110 (8.9)
Female	1086 (46.7)	491 (45.2)	496 (45.7)	99 (9.1)
Total n (%)	2326 (100)	1056 (45.4)	1061 (45.6)	209 (9)
Place of residence ²				
Rural	1275 (55)	723 (56.7)	500 (39.2)	52 (4.1)
Urban	1040 (45)	323 (31.1)	560 (53.8)	157 (15.1)
Total n (%)	2315 (100)	1046 (45.2)	1060 (45.8)	209 (9)

SES – socioeconomic status;

¹p = 0.972 (SES by sex);

²p < 0.001 (SES by place of residence)

Table 6. The family's SES of adolescents who use marijuana in relation to those who do not

Marijuana use ¹	Total n (%)	SES		
		Low n (%)	Medium n (%)	High n (%)
Yes	267 (6.6)	112 (41.9)	121 (45.3)	34 (12.7)
No	3791 (93.4)	1862 (49.1)	1626 (42.9)	303 (8)
Total n (%)	4058 (100)	1974 (48.6)	1747 (43.1)	337 (8.3)

SES – socioeconomic status;

¹p = 0.008 (SES by marijuana smoking)

Table 7. The family's SES of adolescents who use marijuana in relation to their sex and place of residence

Variables	Total n (%)	SES		
		Low n (%)	Medium n (%)	High n (%)
Sex ¹				
Male	177 (67.6)	77 (43.5)	77 (43.5)	23 (13)
Female	85 (32.4)	32 (37.6)	42 (49.4)	11(12.9)
Total n (%)	262 (100)	109 (41.6)	119 (45.4)	34 (13)
Place of residence ²				
Rural	122 (46.6)	65 (53.3)	50 (41)	7 (5.7)
Urban	140 (53.4)	44 (31.4)	70 (50)	26 (18.6)
Total n (%)	262 (100)	109 (41.6)	120 (45.8)	33 (12.6)

SES = Socioeconomic status;

¹p = 0.633 (SES by gender);

²p < 0.001 (SES by place of residence)



Figure 1. The area of the Brčko District of Bosnia and Herzegovina, red colored

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