



## ORIGINAL ARTICLE / ОРИГИНАЛНИ РАД

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

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## SUMMARY

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

**Methods** A total of 4188 primary and secondary school respondents from Brčko District of Bosnia and Herzegovina participated in a cross-sectional study based on the European School Survey Project on Alcohol and Other Drugs questionnaire, adapted to this research. The data was collected using the 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 to SES respondents ( $p < 0.001$ ): more respondents from low-SES families live in rural areas, while those from medium-SES and high-SES families predominantly live in urban areas.

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

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

## 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 cigarette smoking, alcohol drinking, and drug use [1].

The impact of the family's socioeconomic status (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 adolescent's family SES and cigarette smoking, which shows that adolescents from a low-SES families more often smoke cigarettes [4, 7, 8]. Drinking alcohol is in pronounced correlation with the adolescent's family SES, according to which adolescents from high-SES families drink alcohol more often [9, 10]. It is enough for an adolescent from a low-SES family to

move in the company of his/her peers who come from high-SES families to start frequently overusing alcohol [9, 10].

Most researches show a strong link between adolescents' marijuana use and school dropout, taking into account that low SES also strongly influences it [4, 11, 12]. The prevailing standpoint of experts is that the SES plays an important role in the development of adolescents, and, therefore, on the adolescents' decision to start consuming some of the dangerous and illicit substances [13, 14]. Contrary to those attitudes, there are allegations that the link between the SES and cigarettes, alcohol, and illicit drug use has not been fully clarified and that a 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 between the SES respondents and cigarette, alcohol, and marijuana use. Is there a connection between the SES respondents and their gender and place of residence?

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## METHODS

### Research area

The Brčko District of Bosnia and Herzegovina (Figure 1) covers an area of 493.3 km<sup>2</sup>, where a total of 83,516 inhabitants lived in 2013, with an average population density of 169 inhabitants per square kilometer [15].



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

### Respondents

It was planned for 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 students (89.6%), 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) adapted for this research and translated into the official languages of BiH [16]. This questionnaire was created by a group of experts from the European Monitoring Center for Drugs and Drug Addiction 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. Gender, 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 is 66. According to the number of points, a 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 by a 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 without affecting the final answer. After completing their questionnaires, students placed them in an envelope they pasted and handed over to the person who supervised the examination. The adolescents' answer to the question, "Have you ever smoked cigarettes, drank alcohol or used marijuana?" was utilized for this article. The information on their place of residence, education of their parents, and their occupation and marital status was also used.

Prior to the research, parents of the respondents had 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 with 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  $\chi^2$  test. Statistical significance was confirmed at  $p < 0.05$ . We used statistical software IBM SPSS Statistics, Version 20.0. (IBM Corp., Armonk, NY, USA) for data processing.

Respondents volunteered to anonymously fill out the questionnaires after being informed that the results obtained will be used exclusively for scientific purposes. The respondents did not enter their first and last names when filling out 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. A family's SES in relation to gender was calculated on a sample of 4078 respondents, and a family's SES regarding the place of residence was calculated on a sample of 4056 respondents. The SES of the respondents' families in the Brčko District in relation to their gender and place of residence is shown in Table 1.

The results showed that the greatest number of adolescents live in low-SES families, i.e. 1991 (48.8%), 1749

**Table 1.** The SES of the respondents' families of in the Brčko District according to their gender and place of residence

Variables	SES			
	Total n (%)	Low n (%)	Medium n (%)	High n (%)
<b>Gender<sup>1</sup></b>				
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)
<b>Place of residence<sup>2</sup></b>				
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;

<sup>1</sup>p = 0.747 (SES by gender);<sup>2</sup>p < 0.001 (SES by place of residence)**Table 2.** The SES of the families of adolescent smokers and non-smoker

Smoking <sup>1</sup>	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;

<sup>1</sup>p = 0.678 (SES by smoking)**Table 3.** The SES of the families of adolescent smokers in relation to their gender and place of residence

Variables	Total n (%)	SES		
		Low n (%)	Medium n (%)	High n (%)
<b>Sex<sup>1</sup></b>				
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)
<b>Place of residence<sup>2</sup></b>				
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;

<sup>1</sup>p = 0.575 (SES by gender);<sup>2</sup>p < 0.001 (SES by place of residence)

adolescents (42.9%) live in medium-SES families, and the least number of adolescents, 338 (8.3%), live in high-SES families. The difference in the distribution of male adolescents and female adolescents in relation to their family's SES category 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 SES of the respondent's family ( $p < 0.001$ ) and the results show that low-SES respondents most often live in the rural areas (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 SES of adolescent smokers' and non-smokers' families is shown in Table 2.

The answer to the question about smoking was given by 4065 respondents, taking into account that 57.2% respondents stated that they never smoked cigarettes, while 42.8% answered that they did smoke. Comparing the results of the SES of adolescent smokers' and non-smokers' families,

**Table 4.** The SES of the families of adolescents who drink alcohol in relation to those who do not drink

Alcohol drinking <sup>1</sup>	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;

<sup>1</sup>p < 0.001 (SES by alcohol drinking)**Table 5.** The SES of the families of adolescents who consume alcohol in relation to their gender and place of residence

Variables	Total n (%)	SES		
		Low, n (%)	Medium, n (%)	High, n (%)
<b>Sex<sup>1</sup></b>				
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)
<b>Place of residence<sup>2</sup></b>				
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;

<sup>1</sup>p = 0.972 (SES by sex);<sup>2</sup>p < 0.001 (SES by place of residence)

we established that the SES of adolescents' families is not related to their smoking habits ( $p = 0.678$ ). The SES of adolescent smokers' families in relation to their gender and place of residence are shown in Table 3.

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

The answer to the question about alcohol consumption was given by 3990 respondents, according to which 59% of the respondents drank and 41% did not. There is a statistically significant connection between the families' SES and alcohol consumption ( $p < 0.001$ ). Lower percentage of respondents coming from low-SES families drank alcohol (55.2%, 1071/1940) than of 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%, respectively,  $p = 0.877$ ). The SES of families of adolescents who consume alcohol in relation to their gender and place of residence are shown in Table 5.

Comparing the SES of alcohol-drinking respondents' families and the respondents' gender, we found that male

**Table 6.** The SES of the families of adolescents who use marijuana in relation to those who do not

Marijuana use <sup>1</sup>	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;

<sup>1</sup>p = 0.008 (SES by marijuana smoking)**Table 7.** The SES of the families of adolescents who use marijuana in relation to their gender and place of residence

Variables	Total n (%)	SES		
		Low n (%)	Medium n (%)	High n (%)
<b>Gender<sup>1</sup></b>				
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)
<b>Place of residence<sup>2</sup></b>				
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;

<sup>1</sup>p = 0.633 (SES by gender);<sup>2</sup>p < 0.001 (SES by place of residence)

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

The question whether they smoke marijuana or not was answered by 4058 respondents, of which the vast majority never smoked marijuana 3791 (93.4%), while only 267 (6.6%) said they did. The results show that SES of the respondents' families is statistically significantly related to marijuana smoking ( $p = 0.008$ ). The majority of those who smoke marijuana live in medium-SES families (45.3%), 41.9% live in low-SES families, and 12.7% live in high-SES families; 5.7% (112/1974) of respondents coming from low-SES families have smoked marijuana, which is a smaller percentage compared to marijuana-smoking respondents coming from middle-SES (6.9%, 121/1747) or high-SES families (10.2%, 34/337,  $p = 0.028$ ). The SES of families of adolescents who consume marijuana in relation to the respondents' 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 use marijuana more often ( $p < 0.001$ ), the SES of families of those who consume marijuana is not related to gender ( $p = 0.633$ ). The results of marijuana use, taking into account the SES of the

respondents' families in relation to the respondents' place of residence, show that the SES is statistically significantly related to the place of residence ( $p < 0.001$ ). We found that respondents who use marijuana and are coming from low-SES families most often live in the rural areas (59.6%, 65/109); in contrast, their peers who come from medium- and high-SES families mostly live in urban areas (58.3%, 70/120,  $p = 0.010$ , and 78.8%, 26/33,  $p < 0.001$ , respectively).

## DISCUSSION

The results obtained by this research show the connection between families' SES and alcohol and marijuana use, but not the connection between families' SES and 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 found no 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 the SES. In our research, for the assessment of a family's SES, we used the Hollingshead methodology, which 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 [17, 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 the population'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 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 be afforded by adolescents from high-SES families [6, 22]. Alcohol and marijuana cannot be consumed as widely as compared to cigarettes; instead, the users have to go to cafes or night clubs, for which it is necessary to have more money. Access of adolescents to these places is a sign of insufficient parents' care for their children's leisure activities in social circles prone to risky behavior.

Investigating the connection between risky behavior and consumption of illicit substances in relation to the place of residence and SES, we identified a difference in behavior in adolescents from rural areas compared to those from the urban ones. Namely, adolescents from low-SES families who smoke, drink and consume marijuana live in rural areas at a higher percentage, while respondents from medium- and high-SES families who consume these substances predominantly live in urban areas. Our results on the connection of the use of psychoactive substances with the SES of families living in rural areas are consistent with the results of the authors from the United States, according to which respondents from low-SES families living in rural areas smoke, drink, and use marijuana to a much larger extent than their peers living in medium- 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, is high unemployment of the young population, while those who are employed work difficult low-paid jobs, causing the majority of the population to live in poverty. Due to the isolated nature of 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 Brčko allows adolescents to drink alcohol without sanctions. These are the reasons why residents of the rural areas find it difficult to stop smoking cigarettes and drinking alcohol, and a large percentage of those who do try to stop 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- and high-SES families do not consume these substances at a significant percentage are not explained, which should be the subject of further research.

However, good socioeconomic opportunities are a risk factor, and will cause adolescents from urban areas 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 urban areas, 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 cause adolescents to remain without parental control and care. Because of the alienation of parents and children, the latter lose self-confidence, they withdraw into themselves, and communicate with their parents only when they need money. These are the possible reasons why adolescents from urban areas who come from middle- and high-SES families smoke more often than those who come from low-SES families.

It is characteristic for the urban environment that adolescents who come from low-SES families and have friends who come from high-SES families consume cigarettes, alcohol, and marijuana as much as their friends from high-SES families do or are involved in other illicit activities with the friends.

The disadvantage of this research is that the data on which SES calculation was made was obtained by a statement from adolescents without verifying its 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 lived in was rural or urban. In future research it is necessary to expand the parameters for determining the SES, i.e. in addition to the parameters used in the Hollingshead methodology, psychosocial parameters should also be included.

## CONCLUSION

The SES of adolescents' families in the Brčko District is connected with the consumption of alcohol and marijuana but is not connected with cigarette smoking. The gender of the respondents and cigarette, alcohol, and marijuana use are not related to the SES of the respondents' families. The place of residence and cigarette, alcohol, and marijuana use are connected to the SES of the respondents' families – respondents from rural environments who consume these substances more frequently are from low-SES families; urban adolescents who consume these substances are more frequently from middle- or high-SES families.

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## Повезаност социоекономског статуса породице и конзумације дувана, алкохола и марихуане код адолесцената Брчко Дистрикта Босне и Херцеговине

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### САЖЕТАК

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

**Метод** У пресечној студији, заснованој на упитнику Европског школског истраживања о употреби алкохола и других дрога 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 Холингсхедовој 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 породица са средњим или високим СЕС. Пушачке навике нису у релацији са СЕС испитаника ( $p = 0,678$ ). Место становања је повезано са СЕС испитаника који пуше цигарете дувана, пију алкохол и конзумирају марихуану ( $p < 0,001$ ): више испитаника из породица са ниским СЕС живи на селу, док испитаници са средњим и високим СЕС претежно 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:** социоекономски статус; алкохол; цигарете; марихуана; село; град