


## SOCIODEMOGRAPHIC DIFFERENCES IN PREVALENCE, INTENSITY AND PSYCHOSOCIAL CONSEQUENCES OF ADOLESCENT GAMBLING IN MOSTAR

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### ABSTRACT

**Introduction:** Adolescents are a risk group to develop problem gambling considering growing up in the era of widespread gambling activities, what is confirmed by the increasing prevalence of gambling among young people. Their gambling activities can develop into pathological gambling with numerous and harmful psychosocial consequences over time and with intensification.

**Objective:** The objective of this study is to determine the prevalence of different gambling activities (type and intensity), the rate of problematic gamblers and the psychosocial consequences of adolescent gambling in Mostar.

**Subjects and methods:** A total of 402 participants (198 males and 204 females) - students of final grades of high schools in Mostar participated in the study. Average age of participants was 17. Data was collected by filling out questionnaires in which the Gambling Activities Questionnaire and Canadian Adolescent Gambling Inventory were applied.

**Results:** Significant differences were found in the intensity of gambling, harmful psychosocial consequences and the risk of gambling in adolescents in regard to gender and school - young men from the Electrical Engineering School and Secondary Transportation School gamble more intensively and have more psychosocial consequences of gambling and show a higher risk for the development of problem gambling compared to girls and students who attend Gymnasium.

**Conclusion:** This study confirms a relatively high prevalence of problem gambling among adolescents in Mostar and the differences in intensity, risks of gambling and harmful psychosocial consequences with regard to gender, school and age, which confirms the importance of establishing and implementing preventive programs.

**Keywords:** gambling, adolescents, gambling intensity, gambling prevalence, psychosocial consequences.

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## INTRODUCTION

The history of gambling goes back a long way - the first records date back to 5000 BC. (1) and appeared as a global phenomenon in the 19th century. In the 19th century, the important determinants of modern gambling were shaped - the industrialization and institutionalization (2). Gambling changed its forms with the appearance of automatic clubs, betting shops and Internet gambling, representing one of the of the fastest growing economies in the last two decades. It is becoming more and more widespread and accessible, and thus more frequent subject of scientific research. There are various classifications of games of chance, and according to the Law on Games of Chance of Bosnia and Herzegovina (Article 4), classic and special games are distinguished. Classic games of chance are games in which the amount of the prize fund is determined in advance, namely: (1) lottery ticket: commodity, money, commodity-money, express lottery, instant lottery, (2) lotto, keno and other variants of this game and additional games which are arranged in addition to the basic game and use the same ticket, (3) sports forecast - toto and additional games which are arranged in addition to the basic game and use the same ticket, (4) TV raffle - Bingo

and additional games, (5) raffle - Bingo in Betting Shops. Special games of chance are games in which the prize fund is not determined in advance and these are: (1) casino games, (2) slot machine games in special clubs and (3) betting games on sports results and other uncertain events. Gambling is a common name for a set of various games, behaviors and activities, which involve investing money, with risk and hope in the expectation of a positive outcome, i.e. the player takes a risk and hopes to return the investment or get more than that (3). The legal definition of games of chance is similar to the aforementioned definition of gambling and states that a game of chance is considered a game in which, for the payment of a certain amount, the participants are offered the opportunity to gain money, goods, services or rights, whereby the gain or loss depends predominantly on the case or some other uncertain event (Law on Games of Chance, NN 143/14). Considering the frequency and consequences, gambling can best be described as a continuum of behavior from the complete absence of gambling, through social and risky, to problem and pathological gambling (4). Pathological gambling includes preoccupation with gambling, loss of control, tolerance, symptoms similar to drug withdrawal and

relapse and abstinence cycles associated with gambling, and is a clinical or psychiatric diagnosis. On the other hand, problem gambling is not a clinical diagnosis, and the term is associated with individuals who experience certain difficulties due to gambling, from mild to severe, but still do not meet the diagnostic criteria, emphasizing that there is a greater certainty that such individuals will develop pathological gambling. Pathological gambling in adulthood is strongly connected with gambling in early years, (5, 6) and in adolescents there is a faster transition from a social gambler to a problem gambler (1). When considering adolescent gambling, the term problem gambling is more often used to avoid stigmatization and labeling (6), but some clinicians believe that this phenomenon in adolescents is best viewed as a pre-clinical condition (6). Research continuously confirms that gambling leads to harmful psychosocial consequences, with young people being a particularly vulnerable group due to the developmental specificity of age: increased tendency to take risks and seek sensation (7), feelings of invincibility and invulnerability, egocentrism, underestimation of danger (1). Characteristic of adolescent gambling are, according to Stinchfield and Winters (1),

the greater involvement of young males than females, more intense and frequent gambling by older adolescents, ethnic and racial differences, the early onset of gambling (in elementary school), and the involvement of the majority of young people in some of the gambling activities, connection between youth gambling and parents' gambling. According to the meta-analysis results by Shaffer, Hall and Vanderbilt, as stated by Dodig (8), the lifetime prevalence of adult problem gambling is 1.6% compared to the prevalence of gambling among adolescents and students, which is 3.9% and 4.7%. The prevalence of pathological gambling in the world remains at around 1%, despite variations in used methodology and location (9). There are consistent differences in the prevalence of gambling among adults and adolescents that suggest higher prevalence of adolescent gambling. Recent studies (10) confirm that, despite the fact that adolescent gambling is an illegal activity, it is part of the life experience of most minors. Adolescents not only engage in various types of gambling activities, but do so in a problematic manner that leads to a whole range of undesirable consequences. In countries with the longest tradition of youth gambling research (USA, Canada

and Australia), between 2 and 8% of young people manifest compulsive and/or problem gambling patterns (11, 12, 13, 14, 15). An analysis of 44 worldwide studies from 2017 (16) on the gambling of young people aged 10 to 24 shows that 0.2% to 12.3% of young people meet the criteria for problem gambling - 16.9% of them report low to moderate problems, while 70.8% gamble recreationally - problem-free gambling with a higher proportion of problematic consequences among young men. The gambling patterns of BiH high school students from 2015 are similar, where using the same instruments it was shown that 69.3% of students from Sarajevo and Tuzla (N=1036) gambled at least once in their life (17). Out of them, 72.9% have no problematic consequences of gambling (green light), 17.38% report low to moderate problems related to gambling behavior (yellow light), while 9.7% of students are problem gamblers who meet the criteria of problem gambling and report adverse psychosocial consequences. The objective of the research, taking into account adolescents as a vulnerable age group with an increasing prevalence of problem gambling, was to determine the representation of the type and intensity of various gambling activities, to determine

the rate of problem gamblers and to investigate the differences between gambling with regard to significant sociodemographic characteristics.

## METHODS

### Participants and procedure

A total of 402 high school seniors (198 males and 204 females) from Mostar participated in the research in 2017. The sample was convenience and students attended Electrical Engineering School Ruđer Bošković (17.4 %), Secondary Transportation School (29.1 %), Jozo Martinović Secondary School of Economics (29.6 %) and Mostar Gymnasium (23.9 %). The age range was 16 to 19 years, and the average age of the participants was 17. The data was collected in school classrooms, during regularly scheduled classes. The researcher distributed the paper-pencil surveys and students completed them independently and anonymously.

### Measuring instruments

The first part of the questionnaire included questions about sociodemographic data that were constructed for the purposes of this research. The gambling activities questionnaire (8) contained questions

about the types and frequency of gambling activities (11 types), on which the participants checked the playing of a certain game and the frequency on a scale from "every day" to "once a year or less than that" (11). The obtained results were used in this research as a measure of the frequency and intensity of adolescent gambling. The Canadian Adolescent Gambling Inventory (CAGI) is the first instrument designed specifically to assess the level of severity of adolescent gambling problems (18). A part of the instrument, which contains 24 items divided into four factors: psychological, financial and social consequences of gambling and lack of control (the total result is a linear combination of the answers to the questions) was used in this study. A factor analysis using the method of principal components with varimax rotation was verified, however, the existence of a two-factor solution was not confirmed as in the Croatian research (8). The obtained factor structure is unidimensional, and the reliability of the instrument (Cronbach alpha) is high .95.

### Statistical analyses

The data collected in the study were analyzed using statistical software SPSS Statistics 25 (IBM Corp., Armonk, NY,

USA). The Kolmogorov-Smirnov test determined a statistically significant deviation of the obtained distributions from normal, and non-parametric tests were used in the analysis. We calculated descriptive statistical parameters in order to analyze frequency of gambling and problem gambling. Mann-Whitney U, Chi-Square and Kruskal-Wallis tests were used to determine differences between data groups.

### RESULTS

Descriptive analysis of the data show that only 29.1% of respondents did not gamble during their lifetime, while a high rate of them participated in one or more gambling activities during their lifetime (70.9%). According to the CAGI, 11.7% of respondents experience serious consequences because of their gambling ("red light" or high severity of gambling-related problems). About 16% of adolescents are characterized by low to medium severity of gambling-related problems ("yellow light"). The majority of high school students (72.1%) are not experiencing any adverse gambling related consequences ("green light"). Sports betting, TV Bingo and Lotto tickets are the preferred adolescent gambling activities. Online gambling games without stakes are

also fairly common, with 25.9% adolescents playing this at least once a year. Additionally, 21% of respondents bet regularly ("daily, several times a week and about once a week") in the last 3 months

(Sports betting). The activities with low prevalence are playing roulette with a dealer, electronic roulette and card games in a casino (Table 1).

**Table 1.** - Frequency of gambling (N = 402)

	No	Yes	Daily	Several times a week	Once a week	Once a month	Once a year or less
Sports betting	238 (59.2%)	164 (40.8%)	25 (6.2%)	30 (7.5%)	30 (7.5%)	27 (6.7%)	52 (12.9%)
Lotto	294 (73.1%)	108 (26.9%)	6 (1.5%)	13 (3.2%)	8 (2%)	14 (3.5%)	67 (16.7%)
TV Bingo	276 (68.7%)	126 (31.3%)	6 (1.5%)	10 (2.5%)	10 (2.5%)	15 (3.7%)	85 (21.1%)
Lottery tickets	276 (68.7%)	126 (31.3%)	5 (1.2%)	8 (2%)	5 (1.2%)	10 (2.3%)	99 (24.6%)
Slot machines	336 (83.6%)	66 (16.4%)	10 (2.5%)	6 (1.5%)	4 (1%)	9 (2.2%)	37 (9.2%)
Electronic roulette	78 (94%)	24 (6%)	6 (1.5%)	4 (1%)	1 (0.2%)	3 (0.7%)	11 (2.6%)
Roulette	384 (95.5%)	18 (4.5%)	5 (1.2%)	1 (0.2%)	2 (0.5%)	5 (1.2%)	6 (1.5%)
Casino card games	364 (90.5%)	38 (9.5%)	13 (3.2%)	4 (1%)	5 (1.2%)	5 (1.2%)	12 (2.9%)
Virtual Horse Racing	332 (82.6%)	70 (17.4%)	5 (1.2%)	8 (2%)	5 (1.2%)	15 (3.7%)	37 (9.2%)
Internet Gambling	337 (83.8%)	64 (15.9%)	7 (1.7%)	15 (3.7%)	8 (2%)	14 (3.5%)	20 (5%)
Online Gambling without stake	298 (74.1%)	104 (25.9%)	17 (4.2%)	16 (4%)	11 (2.7%)	22 (5.5%)	37 (9.2%)

Male adolescents gamble significantly more and report more psychosocial consequences compared to females (Table 2).

**Table 2.** - *Gender differences in gambling intensity and pronounced psychosocial consequences (N = 402)*

	Male	Female	ManWhitney	Z	p
	<i>Md</i>	<i>Md</i>			
Intensity	5	1	10206.50	-8.71	< .001
Psychosocial consequences	6	0	8901	-10.76	< .001

There are significantly more females in the group without gambling problems ("green light"), while males are more common in the group characterized by a high degree of serious problems related to gambling ( $X^2 = 63.55$ ,  $df = 1$ ,  $p < .001$ ). There is no difference in the risk of gambling with regard to age, education of father and mother (Table 3). A larger number of gymnasium high school students are found

in the group without gambling-related problems (green light,  $X^2 = 14.52$ ,  $df = 1$ ,  $p < .001$ ) and a significantly smaller number in the group of high severity of gambling-related problems (red light,  $X^2 = 11.36$ ,  $df = 1$ ,  $p < .001$ ) compared to students of vocational schools who, in this research, represent a riskier group for the development of problematic gambling.

**Table 3.** - *Difference of adolescent gambling with regard to gender, school and parental education (N = 402)*

		"Green light"	"Yellow light"	"Red light"	$\chi^2$	df	P	Phi coefficient	Cramer V																																																																																																										
		N	N	N																																																																																																															
Gender	Males	98	54	45	99.97	2	< .001	.50	.50																																																																																																										
	Djevojke	192	10	2						School	Transportation	73	22	22	27.12	6	< .001	.26	.18	Economics	92	15	12	Electrical	41	17	11	Gymnasium	84	10	2	Age	16	1	1	0	11.9	6	.06	.17	.17	17	186	45	24	18	93	16	17	19	10	5	6	Education (father)	Without	0	0	0	2.94	10	.98	.09	.06	Elementary School	10	3	1	Highschool (2/3)	46	8	5	Highschool (4)	141	31	25	Bachelor's degree	22	6	4	Ms	49	13	8	Doctorate	21	3	4	Education (mother)	Without	1	0	0	18.02	12	.12	.21	.15	Elementary School	14	1	0	Highschool (2/3)	24	5	4	Highschool (4)	162	29	25	Bachelor's degree	18	9	6	MS	50
School	Transportation	73	22	22	27.12	6	< .001	.26	.18																																																																																																										
	Economics	92	15	12																																																																																																															
	Electrical	41	17	11																																																																																																															
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Age	16	1	1	0	11.9	6	.06	.17	.17																																																																																																										
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Education (father)	Without	0	0	0	2.94	10	.98	.09	.06																																																																																																										
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Education (mother)	Without	1	0	0	18.02	12	.12	.21	.15																																																																																																										
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	Highschool (2/3)	24	5	4																																																																																																															
	Highschool (4)	162	29	25																																																																																																															
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	Doctorate	21	2	6																																																																																																															

p\* <.05

Students that attend Engineering School Ruđer Bošković and Secondary Transportation School gamble more intensively, experience more adverse

gambling related consequences and show a higher risk for the development of problem gambling than adolescents who attend Mostar Gymnasium ( $Md = 0, p < .05$ ) and



Jozo Martinović Secondary School of Economics ( $Md = 0, p < .05$ ). No statistically significant difference in the intensity of gambling was found with regard to the age and parental education ( $p > .05$ ). Additionally, older adolescents (19

years) experience more adverse psychosocial gambling consequences gambling than students aged 17 and 18, but not compared to those who are 16 years old (Table 4).

**Table 4.** - Differences in intensity and psychosocial consequences of gambling with regard to school, age and parental education ( $N=402$ )

Variable	Group	Intensity					Psychosocial consequences				
		<i>Md</i>	<i>Mean rank</i>	<i>H</i>	<i>Df</i>	<i>P</i>	<i>Md</i>	<i>Mean Rank</i>	<i>H</i>	<i>Df</i>	<i>p</i>
	Transportation	1	210.48	15.78	3	< .001	1	224.18	30.88	3	.000
School	Economics	0	188.87				0	184.78			
	Electrical	3	242.44				3	242.28			
	Gymnasium	0	176.37				0	164.85			
Age	16	15	325.25	6.99	3	.072	13	325.25	8.69	3	0.03
	17	2	203.69				0	198.79			4*
	18	2	189.57				0	196.13			
	19	3	231.14				5	254.57			
Education (father)	Without	0	0	1.05	5	.96	0	0	0.16	5	1.00
	Elementary School	2	183.46				0	198.57			
	Highschool (2/3)	2	197.19				0	198.07			
	Highschool (4)	2	200.63				0	200.56			
	Bachelor's degree	2	212.64				0	202.30			
	Ms	2	198.87				0	202.40			
Education (mother)	Without	2	197.00	11.45	6	.08	4	275.50	6.72	6	0.35
	Elementary School	1	159.13				0	165.27			
	Highschool (2/3)	1	173.89				0	201.55			
	Highschool (4)	2	197.68				0	197.35			
	Bachelor's degree	4	244.95				3	234.18			
	Ms	2	201.23				0	198.52			
	Doctorate	5	234.81				0	219.07			

\* $p < 0.05$

## DISCUSSION

The results of the research show that 70.6% of the adolescents in the study gambled at some point in their lives, while only 29.1% are those who never participated in any gambling activity. This represents alarming indicator, moreover, if we take into account the legal regulation of gambling activities in BiH, which prohibits persons under the age of 18 from receiving payments and participating in all games of chance in casinos, betting shops and slot machines clubs, as well as in games of chance organized via the Internet. Taking into account that the majority of high school students surveyed (63.4%) are minors, it can be concluded that the final availability of gambling games is poorly enforced provided by the legal norms. Most of the participants at some point were involved in sports betting, and half of those bet regularly (daily, several times a week, and approximately once a week). The second most common gambling game among adolescents is TV Bingo, followed by lottery-tickets. The gambling patterns in the current research and the previous one conducted in BiH and Croatia are similar (adolescent prefer sports betting, Internet gambling and TV Bingo (17), which could be because similar economic and political situation, cultural similarities and

geographical proximity. The percentage of adolescents who played slot machines (16.4%) and card games in the casino (9.5%) is worrying, given the fact that slot machine games in clubs and casinos are associated with more serious forms of gambling and the risk of developing pathological gambling patterns because they include a high frequency of events, short intervals between stakes and payouts, the experience of an imminent win (which is a significant risk factor for continued gambling), a combination of the possibility of winning very high the builders of the lower profits and the absence of own judgment (19). The categorization of adolescents into gambling risk groups according to CAGI indicates a relatively high proportion of those with high level of severity of gambling-related problems ("red light") - 11.7% and those with low to moderate harmful psychosocial consequences of gambling - 16% ("yellow light") compared to the results of foreign research where 4 - 8% adolescents show compulsive or pathological gambling patterns, while 10 to 15% are at risk of developing more serious gambling problems (20). This can partly be explained by the variability of the instruments used in previous research:

CAGI is designed specifically for assessing the gambling risk of young people, and is according to the authors (21), more sensitive than clinical instruments for examining problematic gambling. Furthermore, gambling in our culture is considered as accepted activity, young people grow up in an environment where it is accessible and where games of chance are largely considered harmless entertainment. The research on general attitudes about gambling showed that gambling is perceived as an acceptable activity - a personal right (22), and an activity that does not represent such a serious social problem as alcohol and drug addictions, smoking and dangerous driving (23, 4). Furthermore, the research of Gori et al. in 2015 (24) showed that problematic gambling is related to geographical and social characteristics and that those that experience more harmful consequences related to gambling live in economically less favorable areas. An environmental variable that is also significantly associated with adolescent gambling is availability, and the parameters of the availability of these places in BiH (1 betting shop for every 2,500 inhabitants) do not contribute to the reduction of problematic gambling in the future. Of course, this relationship is not linear and cause-and-effect, but in

future research this phenomenon should definitely be taken into account together with other environmental factors, which is also confirmed by international research (8). There are significant differences in the intensity of gambling and adverse psychosocial consequences with regard to gender - male adolescent gamble more, have more adverse consequences and are more often represented in groups with medium to highly serious problems related to gambling ("yellow light" and "red light") compared to females, which is also found in previous research (25). Males are generally more impulsive, disinhibited, extroverted, have a greater need for excitement and stimuli, are more competitive, money-oriented (26, 27), more prone to riskier games of chance (1). The influence of upbringing, socially defined gender roles and expectations regarding gender is also important. Some researchers (28) believe that parents encourage their sons' gambling, that it is a part of male culture (29) and that it enables young men to emphasize their masculinity in the social environment by showing boldness and courage (30, 31). Students of the Jozo Martinović School of Economics and the Mostar Gymnasium gamble less often, report a lower prevalence of psychosocial problems related to gambling

than the students of the Ruđer Bošković School of Electrical Engineering and the Secondary Transportation School. The educational context is important for understanding student behavior, which is supported by research results from Croatia (32), which show that vocational school students gamble more often than students that attend Gymnasium, and that those with a higher overall grade point average gamble less compared to their peers with lower grades. High school students that attend Gymnasium schools are generally overloaded with schoolwork: research suggests that 45% of them prepare for school for more than three hours a day, and 10% for five or more hours a day, while students of vocational schools report less learning hours (33), which leaves them more free and unstructured time (predictor of gambling activities). It is plausible that free time is a moderator variable between attending a certain school and gambling activities, because the results of some studies (34) showed that a statistically significant majority of adolescents (71.7%) play games of chance because they feel bored and do not spend own free time in a constructive manner. The obtained results are in accordance with previous research which indicates that students of vocational schools more often participate in games

with high addictive potential, develop problems related to gambling (35), achieve higher results on the scale of gambling (31), bet somewhat more often than Gymnasium students and overall represent a group with high-risk behavior. Adolescents of different ages in this study are equally represented in different risk groups, and they do not differ in terms of gambling intensity, which is a worrisome data because it points to a conclusion that gambling is equally accessible to a part of respondents who did not reach the age of 18 and as such cannot legally participate in gambling games, which is in accordance with recent research in Mostar that suggests an increase in classic and contemporary addictions (36-40). Furthermore, adolescents who are 19 years old experience more adverse psychosocial consequences than those who are 17 and 18 years old, but not compared to those who are 16 years old. The level of parental education does not significantly influence the pattern of adolescent gambling, which may be a consequence of unequal representation of all educational groups in the sample.

## CONCLUSION

The majority of adolescents in the Mostar area have gambled during their lifetime

and the most popular games of chance are sports betting, TV Bingo, lottery tickets and Lotto. The prevalence of adolescents with medium to highly serious psychosocial consequences of gambling is higher than foreign standards, but still in line with the prevalence of problem gamblers in the region. Older adolescents (19 years old) report more harmful psychosocial consequences of gambling than younger adolescents (17 and 18 years old), but not sixteen-year-olds. On average, young men gamble more intensively, report more psychosocial consequences of gambling and are statistically significantly more represented in high-risk groups for the development of problematic gambling compared to girls. Vocational high school students are more often represented in groups of risky gamblers than Gymnasium students. The results of this study speak of a relatively high prevalence of problem gambling among young people, as well as differences with regard to gender and school, which can be the basis for the establishment and implementation of preventive programs for young people that would act on this widespread problem in our country.

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## **SOCIODEMOGRAFSKE RAZLIKE U PREVALENCIJI, INTENZITETU I PSIHOSOCIJALNIM POSLJEDICAMA KOCKANJA ADOLESCENTA U MOSTARU**

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### **SAŽETAK**

Uvod: Adolescenti predstavljaju vulnerabilnu skupinu za razvoj problematičnog kockanja s obzirom na odrastanje u eri široko rasprostranjenih kockarskih aktivnosti što potvrđuje i sve veća prevalencija kockanja mladih ljudi. Njihove kockarske aktivnosti se mogu s vremenom i intenziviranjem razviti u patološko kockanje s brojnim i štetnim psihosocijalnim posljedicama.

Cilj: Cilj ovog istraživanja bio je utvrditi prevalenciju različitih aktivnosti kockanja (vrsta i intenzitet), stopu problematičnih kockara i psihosocijalne posljedice kockanja kod adolescenata u Mostaru.

Ispitanici i metode: U istraživanju su sudjelovala ukupno 402 ispitanika (198 mladića i 204 djevojke) - učenika završnih razreda srednjih škola u Mostaru. Prosječna dob sudionika bila je 17 godina. Podaci su prikupljeni ispunjavanjem upitnika u kojima su primijenjeni Upitnik o kockanju i Kanadski upitnik kockanja adolescenata.

Rezultati: Utvrđene su značajne razlike u intenzitetu kockanja, štetnim psihosocijalnim posljedicama i rizičnosti kockanja adolescenata s obzirom na spol i školu - mladići iz Elektrotehničke i Srednje prometne škole intenzivnije kockaju i imaju veće psihosocijalne posljedice kockanja te pokazuju veći rizik za razvoj problematičnog kockanja u usporedbi s djevojkama i učenicima gimnazije.

Zaključak: Ovo istraživanje potvrđuje relativno visoku prevalenciju problematičnog kockanja kod adolescenata u Mostaru te razlike u intenzitetu, rizicima kockanja i štetnim psihosocijalnim posljedicama s obzirom na spol, školu i dob, što potvrđuje važnost uspostavljanja i provođenja preventivnih programa.

Ključne riječi: kockanje, adolescenti, intenzitet kockanja, prevalencija kockanja, psihosocijalne posljedice.

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