

Gender Differences in Relation to Knowledge and Risky Behavior among Students of Medical Colleges in Serbia: Study of Prevalence

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ABSTRACT

The aim of this study was to determine the level of knowledge about sexually transmitted diseases and the frequency of behavior presenting risk for acquiring those diseases among students of Medical colleges in relation to gender. The study is based on a cross-sectional survey conducted in two Medical colleges in Belgrade in December 2016. A total of 670 students (96%) completed an epidemiological questionnaire. Respondents were selected through random sampling, they took part in the study voluntarily and filled in the questionnaire anonymously and independently. The questionnaire included 18 questions on demographic characteristics, knowledge and risky behavior. Female students were significantly older than male students ($p=0.014$). Male students were more often single, while female students were mostly in the relationship or married ($p<0.001$). Female students have more knowledge about symptoms of sexually transmitted diseases ($p=0.008$) and more than males are familiar with the causality of HPV infection and cervical cancer ($p=0.002$). Male students earlier had the first sexual intercourse ($p<0.001$), had sex on the first date ($p<0.001$), changed sexual partners during their lives ($p<0.001$), and paid for sex ($p<0.001$). Male students have specific risk factors for unhealthy sexual behavior. It is necessary to upgrade the education programs and implement population-targeted prevention and control measures for sexually transmitted infections.

Keywords: Students, gender, knowledge, sexual behavior.

Introduction

Sexually transmitted infections (STIs) represent a significant public health problem for young people¹. People aged 15-24 make up 25% of the sexually active population, and at the same time, 50% of all new STIs in the world are registered in this population².

The World Health Organization (WHO) estimated that more than a million STIs per day are generated globally, and 131 million STIs are caused by *Chlamydia* annually, 78 million infections caused by *Neisseria gonorrhoeae*, 5.6 million by *Treponemapallidum* and 143 million by *Trichomonasvaginalis* infection. More than 500 million people live with genital herpes, and more than 290 million women with HPV infection (1). Genital chlamydiasis one of the most common STIs in Europe in young people 15-24 years of age³.

According to the Institute of Public Health of Serbia, the basic characteristic of STIs in the period 2010-2014 was a decrease in the number of registered cases of infections caused by human immunodeficiency virus (HIV) and genital chlamydiasis. At the same time, there is a trend of an increase in the number of new cases of syphilis and gonorrhoea, with certain oscillations. Given the epidemiological characteristics of STIs, as well as the problems in laboratory diagnostics, there is a reasonable assumption that the reported cases do not show the real situation, due to the unknown extent of diagnosis, as well as due to the insufficient reporting of laboratory-confirmed cases from the private health sector⁴.

Numerous studies indicate that students are at high risk of acquiring STIs⁵⁻⁸. The most commonly described forms of risky behavior for obtaining STI in the student population are age⁸, early entry into sexual intercourse^{8,9},

TABLE 1
DEMOGRAPHIC CHARACTERISTICS OF STUDENT POPULATION

Variables	Male	Female	p value
	N=214	N=431	
Age (years)	MV ± SD	MV ± SD	
All ages	23.63 ± 5.72	25.45 ± 7.30	0.014**
<20	19.65 ± 0.48	19.78 ± 0.42	0.048**
21–30	23.10 ± 2.55	23.24 ± 2.81	0.865**
31–40	35.41 ± 2.24	35.40 ± 2.84	0.852**
>41	44.33 ± 3.45	44.95 ± 2.57	0.394**
Marital status	No (%)	N (%)	
Married	19 (8.9)	102 (23.7)	
In a relationship	95 (44.4)	203 (47.1)	
Divorced	4 (1.9)	9 (2.1)	0.001*
Widow/Widower	–	1 (0.2)	
Single	96 (44.9)	116 (26.9)	
Current smokers	73 (34.1)	157 (36.4)	0.624*
Current alcohol users	116 (54.2)	114 (26.5)	0.001*

*Chi-square test;

**Mann-Whitney U test;

No – number;

MV – mean value;

SD – standard deviation.

not using a condom^{6,8,9}, psychoactive substances abuse^{9,10} and the number of sexual partners⁸. As risk factors for acquiring STI in the student population, sex and the level of knowledge about STIs are described^{11,12}. A study conducted among students in the United States of America showed that psychological differences, attitudes and sexual behavior among male and female students are significant factors for the emergence of STIs¹¹. A study conducted on a Turkish student population has shown a less risky behavior, as well as a lower incidence of STIs among students with a higher level of knowledge than in those less educated about STIs¹².

The aim of this study was to determine the level of knowledge about STIs and the frequency of risky behavior for acquiring STIs among the students of medical colleges in Belgrade, as well as to determine differences according to gender.

Materials and Methods

The research was designed as a cross-sectional study and was carried out in December 2016. The respondents completed an epidemiological questionnaire based on the questionnaires used in the previous research^{5–10,12}. The questionnaire collected the answers to three sets of questions: about the demographic characteristics of the respondents (gender, age, marital status, smoking and alcohol consumption habits), their knowledge of STIs (the ways of acquiring knowledge, the knowledge of the symptoms, the existence of a vaccine against HPV infection, relationship between cervical cancer and STIs) and their behavior (age at first sexual intercourse, sexual orientation, number of

sexual partners during the past year and during the course of life, frequency of sexual intercourse, usage of condoms, sexual intercourse at first date, sexual intercourse under the influence of alcohol and/or other psychoactive substances, tattooing, testing on STIs, self-assessment of risky sexual behavior). The research covered students of all three years in two schools, High Medical College of Professional Studies »Milutin Milankovic« and High Medical College of Vocational Studies in Belgrade. Respondents took part in the study voluntarily and filled in the questionnaire anonymously and independently. The approval for conducting this research was obtained by the Ethics Committee for the Higher Education of the University of Belgrade, whose students participated in the research.

The complete statistical analysis of data was performed using the statistical software package, PASW Statistics 18® [SPSS (Hong Kong) Ltd., Hong Kong]. All variables were presented as the frequency of certain categories. Continuous variables were presented as means and standard deviations. Differences between categorical variables were tested by Chi-square test, while the significance of differences between continuous variables was tested by non-parametric Mann-Whitney U test. The normality of the data was assessed using the Kolmogorov-Smirnov test. The relationship between the variables was tested by Spearman's coefficient correlation. All the analyses were estimated at $p < 0.05$ level of statistical significance.

Results

Of 670 students who participated in the study, 645 (96%) completed the questionnaire, including 431 (66.8%) females and 214 (33.2%) males. Female students were sig-

TABLE 2
KNOWLEDGE AND BEHAVIOR OF STUDENTS ABOUT SEXUALLY TRANSMITTED INFECTIONS (STI)

Variables	Male No (%)	Female No (%)	p value
Source of information about STI			
From family	100 (46.7)	187 (43.4)	0.472*
From friends	84 (39.3)	170 (39.4)	1.000*
In school /faculty	173 (80.8)	382 (88.6)	0.010*
Through counseling	30 (14.0)	50 (11.6)	0.453*
In the health center	36 (16.8)	87 (20.2)	0.359*
Over the Internet	120 (56.1)	263 (61.0)	0.263*
Through the daily press	60 (28.0)	131 (30.4)	0.599*
Other	2 (0.9)	4 (0.9)	1.000*
Whether STI always give symptoms			
Yes	58 (27.1)	84 (19.5)	
No	116 (54.2)	288 (66.8)	0.008*
I don't know	40 (18.7)	59 (13.7)	
Is there an effective vaccine against a HPV			
Yes	53 (24.8)	107 (24.8)	
No	78 (36.4)	144 (33.4)	0.707*
I don't know	83 (38.8)	180 (41.8)	
Is there a link between HPV infection and cervical cancer			
Yes	82 (38.3)	229 (53.1)	
No	11 (5.1)	18 (4.2)	0.002*
I don't know	121 (56.5)	184 (42.7)	
Age at first sexual intercourse (years)			
	(MV ± SD)	(MV ± SD)	
	17.01 ± 1.84	18.49 ± 1.79	0.001**
Sexual status			
Heterosexual	208 (97.2)	430 (99.8)	
Homosexual	5 (2.3)	1 (0.2)	0.012*
Bisexual	1 (0.5)	-	
Number of sexual partners			
	(MV ± SD)	(MV ± SD)	
Total	5.86 ± 5.37	2.35 ± 2.74	0.001**
Last 12 months	1.85 ± 1.67	0.91 ± 0.74	0.001**
Frequency of sexual intercourse			
Every day	24 (11.2)	24 (5.6)	
2-3 per week	90 (42.1)	200 (46.4)	
1-3 per month	62 (29.0)	108 (25.1)	
1 in 3 month	20 (9.3)	15 (3.5)	0.001*
1 in 6 month	4 (1.9)	5 (1.2)	
1 in 12 month	5 (2.3)	10 (2.3)	
Virgin	9 (4.2)	69 (16.0)	
Usage of condom during sexual intercourse			
	78 (36.4)	162 (37.6)	0.845*
The reasons for not using condoms			
It is expensive	11 (8.1)	8 (3.0)	
Partner refuses to use it	10 (7.4)	7 (2.6)	
Use other contraceptives	13 (9.6)	58 (21.6)	
It is not necessary to use a condom	4 (2.9)	15 (5.6)	0.001*
I trust my partner	42 (30.8)	133 (49.4)	
Reduces the sensitivity of pleasure during intercourse	56 (41.2)	48 (17.8)	

Sexual intercourse on the first date?	74 (34.6)	21 (4.9)	0.001*
Sexual intercourse for money?	20 (9.3)	2 (0.5)	0.001*
Alcohol and other psychoactive substances?			
Always	10 (4.7)	1 (0.2)	
Rarely	96 (44.9)	82 (19.0)	0.001*
Never	108 (50.5)	348 (80.8)	
Tattooing?	21 (9.8)	35 (8.1)	0.568*

*Chi-square test;

**Mann-Whitney U test;

No – number;

MV – mean value;

SD – standard deviation;

STI – sexually transmitted infections.

nificantly older than male students (23.63 ± 5.72 vs 25.45 ± 7.30 , $p=0.014$). Male students were more often single (44.9% vs 26.9%; $p<0.001$), while female students were mostly in the relationship or married (70.8% vs 53.3%; $p<0.001$). Gender differences in smoking status were not found but were found in alcohol consumption. Statistically, there were significantly more men who consumed alcohol than women (54.2% vs 26.5%; $p<0.001$) (Table 1).

Mainly, there were no differences between male and female students in the way of acquiring knowledge about STIs, except in case of acquiring knowledge at school/faculty (80.8% vs 88.6%, $p=0.010$) (Table 2). Female students (66.8%) significantly more often than males (54.2%) knew that STIs do not always give symptoms. The majority of students of both sexes did not know that there is an effective vaccine for HPV infections (75.2% of both sexes). More than half of female students (53.1%) were informed about the association between HPV infections and cervical cancer, while only 38.3% of male students knew that ($p=0.002$).

Male students had first sexual intercourse significantly earlier than female students (17.01 ± 1.84 vs 18.49 ± 1.79) (Table 2). Males significantly more often changed sexual partners during their lives (5.86 ± 5.37 vs 2.35 ± 2.74), and also over the past 12 months (1.85 ± 1.67 vs 0.91 ± 0.74). As for the frequency of practicing sexual relations, the majority of males (71.1%) and females (71.5%) usually engage in sexual relations 2–3 times per week or 1–3 times in a month. However, there are significantly more females who had never practiced sexual intercourse and males who practice it daily.

More than 60% of all students do not use condoms, without significant differences between genders. As the reason why they do not use a condom, the majority of male students gave an answer that condom reduces pleasure during sexual intercourse (41.2%), while the majority of female students do not use a condom because they trust their partners (49.4%). Male students more significantly often than female students: engage in sexual intercourse on the first date (34.6% vs 4.9%), pay for sexual intercourse (9.3% vs 0.5%) and engage in sexual intercourse under the influence of alcohol and psychoactive substances (49.5% vs 19.2%). There is no significant difference between genders regarding tattooing (9.8% vs 8.1%) and testing on STIs any time

in their life. Male students had significantly more frequent sexual relations with persons of the same sex and both sexes than females. On the basis of self-critical thinking, male students were significantly at greater risk for getting STI than the females (24.8% vs 17.6%).

Discussion

A recent sociological research conducted in youth population in Serbia showed that they are patriarchal and that sexual relations and STIs are still a taboo in the society. These claims are supported by the fact that every tenth young person older than 15 is unaware of the importance of particular methods of contraception, not only in preventing unwanted pregnancies but also in preventing the transmission of STIs¹³.

Demographic characteristics of the respondents

As in similar studies carried out in the countries in our region and in Europe^{5,9}, there were significantly more female than male respondents in our study (66.8% vs 33.2%). Our respondents were older (24.85 years) in comparison to respondents from Brazil (20.16 years)⁸.

Male students were most often single (44.9%), while female students were most often in a relationship (47.1%). In our study, 32.6% of respondents were married, in contrast to Sao Paulo students where 97.3% were not in a marital union⁸.

In our respondents, there was no significant difference between genders regarding tobacco smoking habits, but male students were more likely to drink alcohol than females (54.2% vs 26.5%). Male students from Uganda significantly more often consumed alcohol than female students (54.3% vs 41.9%)¹⁴.

Knowledge

Male students who participated in our research, compared to women, as the most common source of knowledge about STIs cited: school/faculty (80.8% vs 88.6%), internet (56.1% vs 61.0%), family (46.7% vs 43.4%), and at the end the newspaper (28.0% vs 30.4%). In contrast, the study in

Ghana showed that the majority of respondents, 83% acquired knowledge of STIs through TV programs (84.0% males *vs* 82.0% females)¹⁵. Nearly 80% of respondents from Turkey acquired knowledge of STIs from the book-magazine-newspaper (76.5% males *vs* 82.4% females)¹⁶. It is interesting that, unlike our respondents, only 19.3% of respondents in a study from Turkey identified school/faculty as a source of knowledge about STIs¹⁶.

In our study, female respondents were significantly more familiar with the causality of HPV infection and cervical cancer (53.1% *vs* 38.3%) than males. A survey conducted on 2500 students in North India showed that only 15.0% were familiar with this causal relationship¹⁷. As within our study, in this research, knowledge of female students of the causality of HPV infection and cervical cancer was higher than in male students (68.5% *vs* 31.5%)¹⁷. A study conducted among medical students in Nigeria showed that 73.9% of respondents knew that HPV infection has a causal relationship with cervical cancer¹⁸. The limited knowledge of our respondents about this STI is in line with the fact that in 2002 Serbia had the highest incidence of cervical cancer in Europe¹⁹, while in 2012 it was fourth in terms of incidence, and third in terms of mortality from cervical cancer in Europe²⁰.

Risky behavior

Numerous studies indicate that there are gender differences in risky behavior for acquiring STIs^{5,8,21}. Our research indicated that men entered into the first sexual relationship earlier than women (17.01 *vs* 18.49 years old). Male students from Brazil entered into the first sexual intercourse earlier than female students (13.0 *vs* 17.5 years old)⁸. A study in a population of Portuguese students showed that majority of the respondents had first sexual intercourse when they were 16 or more years old (72% of males *vs* 82.5% females)⁹.

Male students from Brazil had more sexual partners during their lives than females (5.8 *vs* 3.0), which is in line with the results of our research (5.8 *vs* 2.3)⁸. Our male respondents were significantly more likely to have sexual intercourse under the influence of alcohol and other psychoactive substances than females (49.6% *vs* 19.2%), which is in line with the results of the authors from Portugal (53.1% *vs* 27.3%)⁹. Authors from Croatia point out that 19.2% of men had sexual relations under the influence of alcohol compared to 7.6% females²². It is similar among students in Uganda (16% *vs* 9%)²³. Bjekić et al. showed that respondents with STIs were significantly more likely to enter into sexual relations under the influence of alcohol compared to the control group of the respondents²⁴.

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A survey conducted among young people in Denmark indicated that a third of respondents do not use a condom²¹, while about two-thirds of our respondents of both sexes had exhibited this type of risky behavior (63.6% males *vs* 62.4% females). Unlike students from Croatia whose main reason for not using condoms is taking other contraceptives²⁵, most of our male students said that they do not use a condom because it reduces the pleasure during sexual intercourse (41.2%), while the majority of female students do not use condoms because they trust their partners (49.4%).

Our male students were tested for STIs more often than female students (12.1% *vs* 9.7%) as opposed to young people in Denmark, where more young women were tested for STI (14.8% of males *vs* 18.5% females)²¹.

Limitations

This study, like other observational studies, had some limitations. Due to the cross-sectional design of the current study, causal inferences could not be drawn from the associations. Another limitation was that findings from this study may not be generalized to the whole population of the young people because the study involved only those young people who are in higher educational institutions.

Conclusion

A survey conducted in the population of students of medical colleges in Belgrade showed that male students, compared to female students, had a lower level of knowledge about STIs and that they were more likely to behave in a risky manner. The most common forms of risky behavior in both sexes are not using condoms and frequent changes of sexual partners, as well as sexual intercourse at the first date in male respondents. It is necessary to upgrade the STI education programs and implement population-targeted prevention and control measures for the STIs.

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RODNE RAZLIKE U ODNOSU NA ZNANJE I RIZIČNO PONAŠANJE MEĐU STUDENTIMA VISOKIH MEDICINSKIH ŠKOLA U SRBIJI: STUDIJA PREVALENCIJE

SAŽETAK

Cilj ovog istraživanja bio je odrediti razinu znanja o spolno prenosivim bolestima i učestalost ponašanja koja predstavlja rizik za stjecanje tih bolesti među studentima medicinskih fakulteta u odnosu na spol. Istraživanje se temelji na pregledu poprečnog presjeka provedenom na dva Medicinska fakulteta u Beogradu u prosincu 2016. godine. Ukupno 670 studenata (96%) završilo je epidemiološko ispitivanje. Ispitanici su birani slučajnim uzorkovanjem, dobrovoljno su sudjelovali u studiji te su anonimno i samostalno popunili upitnik. Upitnik je uključivao 18 pitanja o demografskim karakteristikama, znanju i rizičnom ponašanju. Studentice su bili znatno starije od muških ispitanika ($p = 0,014$). Studenti su bili češće bez partnera, dok su učenice većinom bile u vezi ili oženjene ($p < 0,001$). Ženske ispitanice imaju više znanja o simptomima spolno prenosivih bolesti ($p = 0,008$), a više od muškaraca su upoznati s uzročnicima infekcije HPV-om i rakom vrata maternice ($p = 0,002$). Muškarci su ranije imali prvi seksualni odnos ($p < 0,001$), imali su seks na prvom spoju ($p < 0,001$), mijenjali seksualne partnere tijekom svog života ($p < 0,001$) i plaćali za seks ($p < 0,001$). Studenti imaju specifične faktore rizika za nezdrav seksualno ponašanje. Potrebno je nadograditi obrazovne programe i provoditi mjere prevencije i kontrole usmjerene na stanovništvo za spolno prenosive infekcije.