

KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS SEXUALLY TRANSMITTED DISEASES AMONG MEDICAL AND NON-MEDICAL FEMALE STUDENTS OF ACADEMY OF PROFESSIONAL STUDIES ŠABAC, SERBIA

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ABSTRACT

Purpose: The incidence of sexually transmitted disease (STDs) is being increased in the Mačva district. The aim of this study is to investigate differences in sexual behaviors, knowledge and attitudes related to STDs among female students of health and non-medical studies.

Materials and Methods: In the cross-sectional study, an anonymous questionnaire was used specifically designed for the purpose of this investigation, among female students of health and non-medical studies.

Results: A total of 394 students of health and non-medical studies (120 and 274, respectively). The majority (94.3%) had heard of STDs, and 76.6% knew STDs could be present without symptoms (90% students of health and 62% non-medical studies; $p=0.000$). Among the sexually-active students (81.5%), 36.3% reported having used a condom. Most of students (71.9%) were aware that using condoms for STDs prevention was important. One fifth of students of health study were tested for STDs, while the percentage of tested non-medical students was three times lower ($p=0.000$). Previous education and faculty type were strongly associated with knowledge level and attitudes among students. The primary and secondary school teachers were the main source of information for one-third of students (51.7% medical and 25.2% non-medical).

Conclusion: There is a need to revise the existing STD education curriculum in both schools and universities and implement targeted educational measures.

Key words: sexually transmitted diseases, attitudes, female students, health education, condom.

INTRODUCTION

Sexually transmitted diseases are infectious diseases. The most common route of transmission of these diseases is sexual contact, but they can also be spread through non-sexual contact: the inoculation route and vertical transmission (from mother to child during pregnancy and childbirth). Due to their appearance and the consequences accompanying them, as well as the possibility of asymptomatic carriers, they have become a global public health problem. In recent years there has been a steady growth trend among patients with sexually transmitted infections. They most often appear among the youth population at the beginning of the reproductive period. More than a million sexually transmitted infections are reported worldwide every day [1,2]. The 69th World Health Assembly adopted 3 global health sector strategies for the period 2016-2021 for HIV, viral hepatitis and sexually transmitted infections [3-5] what emphasize the need for a comprehensive,

integrated package of necessary interventions in the prevention of sexually transmitted infections.

Students are a vulnerable category of the population prone to risky behaviors related to reproductive health [6]. Along with the social and demographic promenade in Serbia over the last few decades, sexual attitudes and behavior among young people have changed. Despite the sharp increase in sexual activity, the sexual education it provides to adolescents at school and university in Serbia continues to accompany the new transition, resulting in increased risk of sexually transmitted diseases. According to the data of the Institute of Public Health in Šabac in 2015, the number of diagnostic new cases of sexually transmitted diseases in the Machvan district is drastically increasing with stopping rates of 20.2 per 100,000 inhabitants (increase over 100%), and the registered infection was Chlamydia with a triple, it already becomes ill and stops incidences of 17.80 per 100,000 inhabitants [7]. Data from the Institute of Pub-

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lic Health of Serbia from 2016 indicate that the Mačva district was one of the four water districts in the Republic of Serbia according to the number of abortions [8]. Research in Serbia has shown that study medicine has more knowledge about sexually transmitted diseases than students in other fields [9], which shows a positive impact on successful expertise, but also on the need for regular targeted education in the rest of the student population. The study of knowledge and attitudes about sexually transmitted diseases in the general population is mainly focused on knowledge about HIV / AIDS [10]. The magnitude of the problems related to risky sexual behavior, knowledge, attitudes and the number of patients with sexually transmitted infections has not been sufficiently clarified due to the insufficient number of examinations, non-diagnosis or asymptomatic manifestations of these infections.

The aim of this study was to determine the existence of differences in sexual behavior, attitudes and knowledge on sexually transmitted diseases among female students of medical and non-medical educational profiles of Academy of Professional Studies Šabac related.

MATERIALS AND METHODS

This cross-sectional study was conducted at the Higher medical and business technological school of applied studies and Pre-school teacher training college of applied studies in Šabac (hereinafter referred to as Academy of Professional Studies Šabac), from April to May 2018. Criteria for inclusion in the study were female students of health study programs (Health Care and Pharmacy) and non-medical (Economics, Environmental Protection, Gastronomy, Information Technology and Pre-school teacher), all three years of study, divided into two comparative groups (health and non

-medical science students). The questionnaires contained information about socio-demographic characteristic of the students, sexual behavior, knowledges and attitudes towards STDs. Then the data were entered and analyzed using SPSS for Windows Version 20.0. For descriptive statistics results were expressed in terms of proportions or percentages and association between variables was calculated using Chi-square test, Fisher's Exact test, Mann-Whitney U test i Monte Carlo test, and p-value of <0.05 was considered as significant. Univariate analysis was performed to obtain measures of frequency of variables such as risk factors. Permission to carry out the study was obtained from Academy of Professional Studies Šabac, and consent was obtained from the respondents. Data collection occurred in the classrooms.

RESULTS

1. Socio-demographic characteristics of the examined groups

The study involved 394 female respondents, 120 (30.5%) female students in the field of medical and 274 (69.5%) in the field of non-medical sciences. The largest number of respondents was between 18 and 24 years old (87.3%), 7.9% were aged 25-35 years while older than 35 were 4.8%, and 330 (83.6%) of them were not married. The majority of respondents stated that they were of the Christian-Orthodox religion (99.2%), while 0.8% were of the Orthodox-Roman Catholic religion. An almost equal percentage of respondents lived in urban and rural areas (47.8% / 52.2%). According to the years of study, there was an equal percentage of respondents in both groups (Table 1). No statistically significant differences were noticed in the socio-demographic characteristics of the examined groups.

Table 1: Sociodemographic characteristics of the respondents in Academy of Professional Studies Šabac

Variable	Number (health students / non-medical students)	Percent (health students / non-medical students)
Age of the respondent		
18-24	97/247	80.8/90.1
25-34	13/18	10.8/6.6
>34	10/9	8.3/3.3
Currently married		
Yes	20/44	16.7/16.1
No	100/230	83.3/83.9
Year of study		
First	42/86	35/31.4
Second	40/99	33.3/36.1
Third	38/89	31.7/32.5

Residence before joining university		
Urban	56/134	46.7/48.9
Rural	64/140	53.3/51.1
Religion		
Orthodox	118/273	98.3/99.6
Catholic	2/1	1.7/0.4

2. Respondents' behaviors in regards to reproductive health

Respondents of both groups had sexual experience (81.5%) and the first sexual intercourse was on average at the age of 18, with no statistically significant difference between the examined groups (median = 18; min = 14; max = 24; SD = 1.46; $p=0.631$). The motives for entering the first sexual intercourse in both groups in the largest percentage (57.4%) was love, followed by physical attraction (15.5%), while 1.3% of respondents stated the insistence of the partner (0.8% female students in the field of medical and 1.5% in the field of non-medical sciences). The comparison of the examined groups did not reveal any difference in the motives for entering the first sexual intercourse ($\chi^2 4.174$; $p=4.147$). About 36.3% of respondents in both groups regularly used a condom during sexual intercourse while 11.9% never used it, so that no statistically significant difference was found between the surveyed groups when it comes to this type of risky behavior ($\chi^2 2.887$; $p=0.577$). One-fifth of the respondents in the medical field (20.8%) were tested for sexually transmitted diseases, while that percentage in the respondents in the non-medical field (7.7%) was almost three times lower ($\chi^2 14.035$; $p=0.000$).

3. Knowledge and sources of information

When asked if they knew the term „sexually transmitted disease”, 99.2% of medical respondents had enough knowledge about this topic except one student who stated that she/he was familiar with it but did not have enough knowledge. A small number of respondents (89.4%) in non-medical fields were familiar with this term what confirmed the existence of a statistically significant difference in the information of the examined groups ($p=0.001$). More than a half of the respondents in the medical sciences group received information on sexually transmitted diseases by primary and secondary school teachers for the first time, while only one quarter of non-medical educational profiles had the opportunity to receive information on this topic at school. The media and the Internet as a source of information were more represented in the population of students with non-medical educational profiles compared to future health workers. We noticed that a very small percentage of students in both groups were informed by friends, parents, siblings. There was a high statistical significance in the given answers when it comes to the source of information on this topic (Monte Carlo test ($p=0.000$)).

Table 2. Sources of knowledge and information on sexually transmitted diseases

Source of Information	Health students	Non-medical students	Total		
	N	Yes (%)	N	Yes (%)	N
Gynecologist	17	14.2	70	25.5	87
Medical personnel	5	4.2	4	1.5	9
Pharmacist	0	0.0	3	1.1	3
primary and/or secondary school education	62	51.7	69	25.2	131
Tertiary school education	5	4.2	27	9.9	32
Television	2	1.7	21	7.7	23
Internet	13	10.8	37	13.5	50
Magazines, newspapers	2	1.7	7	2.6	9
Parents	7	5.8	21	7.7	28
Friends	7	5.8	13	4.7	20
Brother and sister	0	0.0	2	0.7	2
Total	120	100.0	274	100.0	394

When it comes to the terms of „sexually transmitted diseases”, the respondents of the medical educational profile had more knowledge in comparison to the respondents of non-medical study programs. The lowest

percentage of both groups was informed about trichomoniasis, while almost all respondents knew that HIV infection is a sexually transmitted disease (Table 3).

Table 3. Knowledge of terminology on sexually transmitted diseases

Disease	Health students	Non-medical students	OR (CI)	Chi-square test		
	N	Yes (%)	N	Yes (%)		χ^2
HIV/AIDS	117	97.5	249	90.9	0.25 (0.08-0.86)	5,547
Syphilis	109	90.8	172	62.8	0.17 (0.87-0.33)	32,12
Gonorrhea	106	88.3	163	59.5	0.19 (0.11-0.36)	32,05
Condyloma (genital warts)	106	88.3	186	67.9	0.28 (0.15-0.52)	18,19
Genital herpes	98	81.7	143	52.2	0.25 (0.15-0.41)	30,53
Chlamydia	89	74.2	116	42.3	0.26 (0.16-0.41)	33,88
Hepatitis B	76	63.3	104	38.0	0.35 (0.23-0.55)	21,66
Hepatitis C	84	70.0	105	38.5	0.27 (0.17-0.42)	32,21
Trichomoniasis	60	50.0	69	25.2	0.34 (0.22-0.53)	23,34

OR = Odds Ratio; CI = 95% confidence interval

Respondents in the field of medical sciences were more familiar with the three main routes of transmission of sexually transmitted infections (unprotected sexual intercourse, inoculation route of transmission from infected mother to child during pregnancy and vagi-

nal delivery) compared to non-medical students. Also, a large percentage of respondents in the non-medical field knew the ways in which the causative agents of sexually transmitted diseases cannot be transmitted (shown in Table 4).

Table 4. Knowledge of the routes of transmission of sexually transmitted diseases

STDs transmission	Health students	Non-medical students	OR (CI)	Chi-square test		
	N	Yes (%)	N	Yes (%)		χ^2
Unprotected sexual intercourse	119	99.2	253	93.3	0.10 (0.01-0.76)	7,39
Non-sexual means (blood or blood products)	109	90.8	168	61.3	0.16 (0.08-0.31)	34,83
Transmitted from mother to child	103	85.8	146	53.5	0.19 (0.11-0.33)	38,01
Cuddle	10	8.3	17	6.2	0.73 (0.32-1.64)	0,59
Dinner set	16	13.3	20	7.3	0.51 (0.26-1.03)	3,62
Bath towel	42	35.0	79	28.8	0.75 (0.48-1.19)	1,49
Toilet seat	29	24.2	69	25.2	1.06 (0.64-1.74)	0,05

Female students did not show a high level of knowledge when it comes to the consequences of sexually transmitted infections. One quarter of medical students and as many as a half of non-medical students did not identify cervical cancer as a consequence of a sexually transmitted infection. The largest percentage

of respondents in both groups recognized the impossibility of conception and sterility as consequences, while the least informed about the possibility of ectopic pregnancy and stillbirth. Medical science students showed a higher level of information compared to non-medical science students (Table 5).

Table 5. Knowledge about the consequences of sexually transmitted infections

Consequences of STDs	Health students	Non-medical students	OR (CI)	Chi-square test		
	N	Yes (%)	N	Yes (%)		χ^2
Infertility	96	80.0	165	50.2	0.38 (0.23-0.63)	16.60
Sterility	101	84.2	189	69.0	0.42 (0.24-0.73)	9.91
Preterm delivery	79	65.8	57	20.8	0.14 (0.09-0.22)	74.87
Ectopic pregnancy	60	50.0	57	20.8	0.26 (0.17-0.42)	34.08
Stillbirth	66	55.0	53	19.3	0.20 (0.12-0.31)	50.33
Carcinoma cervicis uteri	87	72.5	128	46.7	0.33 (0.21-0.53)	22.38

OR = Odds Ratio; CI = 95% confidence interval

One third of non-medical students knew that herpes simplex virus type 2 (HSV type 2), the cause of genital herpes, could cause oral herpes (herpes labialis) during unprotected oral sex, while over 60% of medical students knew the correct answer. According to the given answers, a significant statistical difference was found between the groups (χ^2 30.46; $p=0.000$). Also, the same distribution of answers was when it comes to the need of using condoms during oral sex, which resulted in better information of medical students (χ^2 29.79; $p=0.000$).

Knowledge about the asymptomatic carrying of sexually transmitted infections was represented in a higher percentage among female students of medical sciences in relation to the compared group (90% / 62.4%), with a statistically significant difference between the given responses of the examined groups (χ^2 34, 63; $p=0.000$).

4. Attitudes of the examined students

When it comes to attitudes about the use of condoms as a form of protection against sexually transmitted diseases, a significant difference was noticed between the examined groups (χ^2 15,334; $p=0,000$), with a higher percentage of medical respondents believing that it is necessary to use a condom regularly comparing to non-medical peers (81.7% / 62%). More than a half (58.3%) of medical students fully agreed that a person who had had unprotected sex should be concerned about her/his health, and 27.5% were partially in agreement, while 5% disagreed with this claim. Full and partial agreement was expressed by 40.9% and 34.7% of respondents in the comparison group, while 7.3% of them did not agree with this statement. 9.2% of

medical students and 17.2% of non-medical students were not sure about this claim. A statistically significant difference in responses was confirmed among the examined groups ($p=0.001$). Respondents of both groups (83.8%) had opinion that they would not have sexual intercourse with a person they know or suspect has a sexually transmitted disease, 2.3% would agree to sexual intercourse, while 14% of respondents were unsure ($p=0.806$). Almost all respondents in the medical field (97.5%) thought that if there was a suspicion of a sexually transmitted disease, a doctor should be consulted, while a smaller percentage of respondents in the second group had such an opinion (87.2%). According to the given answers, a significant statistical difference in attitudes was found between the examined groups (χ^2 14.3; $p=0.001$).

Half of the female students from the non-medical group (52.9%) would agree to be vaccinated against human papilloma virus (HPV), 36.5% were not sure whether they would agree while 10.6% were against it. More than two thirds of female students in the field of medical sciences (69.2%) agreed with the personal use of this vaccine as protection against HPV, which is statistically significant in comparison to the attitude of the respondents in the comparison group (χ^2 9.305; $p=0.01$). A high percentage (96.7%) of respondents in both groups considered it necessary to maintain reproductive health, regular check-ups at the chosen doctor's/ gynecologist's and counseling about the same, with no difference in this attitude among respondents ($p=0.313$). Almost all respondents were of opinion that young people should get more information on this topic through schooling, i.e. organized lectures by the

medical staff of health centers (97.5% and 96.7% of medical respondents, and 88.7% and 90, respectively, 1% of non-medical respondents). The difference in the attitudes of the examined groups regarding the organized lectures in schools and health centers was confirmed ($p=0.003$ and $p=0.04$).

DISCUSSION

The students of both groups were very similar in demographic characteristics but, in accordance with their previous knowledge and experience, they showed different levels of knowledge and attitudes regarding sexually transmitted diseases. About a third of respondents (36.3%) of both groups used a condom regularly as a way of protection against sexually transmitted diseases and unwanted pregnancy, although their views were that this type of protection should be used more often. The attitudes and level of knowledge of the respondents were not accompanied by appropriate patterns of behavior, which was confirmed in previously conducted research all over the world [11, 12]. According to the data from the National Population Health Survey of the Republic of Serbia conducted in 2013, contraceptives have been used by 21.5% of women between the ages of 15 and 49 where educated women most commonly use a condom as a contraceptive (28.5%) [10].

In survey conducted in Bosnia and Herzegovina, 66.7% of female students used a condom [13], while half of the students in northern Kosovo used this type of protection [14], which shows that a condom as a type of protection against sexually transmitted diseases was less used among to the students of the Mačva district.

One third of female students received information on sexually transmitted diseases for the first time by primary and secondary school teachers, and one fifth by gynecologists, while significantly less information on this topic was received in higher education (8.1%). For only 12.6% of female students, the source of information were parents, relatives and friends, which is significantly less than the female students from Kampala whose parents were the most represented source of information about STDs [11]. In previously conducted research in Serbia, not much has been said within the family about topics in regards to reproductive health [15]. The importance of preventive measures, such as regular use of condoms, care for reproductive health, regular examinations and education of young people through schooling and organization of lectures by health workers in health centers, was especially emphasized by students in the field of medical sciences with aim of improving sexual health. However, research conducted in Serbia confirms the need for targeted education in the field of reproductive health prevention for both doctors and health professionals of other profiles because the research did not show a sufficient degree of knowledge and awareness on this topic [16, 17].

The average age of the respondents entering the first sexual intercourse was 18 what indicates the same re-

sults obtained during the National Survey in 2013 and in the region [10, 13]. A special problem when it comes to sexually transmitted diseases is the insufficient level of information about the transmission and protection measures. If we take into account that the average age of sexual intercourse is being decreased, this issue has gained much greater public health significance. According to an epidemiological study conducted in Belgrade, about 40% of teenage girls who sought help at the City Institute for Sexually Transmitted Diseases had their first sexual intercourse before the age of 16, more sexual partners and sex immediately after dating a partner, they used a condom less often and had a history of sexually transmitted infections [9]. According to the 2013 Survey, 25.7% of girls in Serbia aged 15-19 have had sexual intercourse [10]. Data from the Institute of Public Health in Šabac indicate the need for intensive health education work in order to promote safe sexual behavior and the importance of timely diagnosis due to the drastically increased number of patients [7]. Due to its complexity, preserving, improving and protecting reproductive health requires a multidisciplinary approach, which includes the adoption of healthy lifestyles and responsible sexual behavior. According to the results of numerous studies, the frequency of sexual activity among young people in the Republic of Serbia is being increased. A representative survey conducted among female students in Bosnia and Herzegovina indicates that 66.7% of female students had sexual intercourse, while in our study as many as 81% of female students had their first sexual experience [13]. However, the motive for the first sexual intercourse in half of the respondents was love what coincides with the research conducted at the University of Kragujevac, Serbia [18]. At the insistence of a partner, 1.3% of respondents had their first sexual intercourse, while in a study conducted among female students in Southeast Ethiopia, 6.8% were raped [19]. In a study conducted in Serbia, 5% of adolescent girls reported rape or forced sexual intercourse by regular partners [15].

The majority of respondents (92.4%) had heard of the term „sexually transmitted disease” and 76.6% knew that there were asymptomatic carriers of the disease. In a study conducted in Malaysia among medical students, a smaller percentage of students were familiar with the concept of sexually transmitted disease, and only half of them knew that a person could have sexually transmitted disease without symptoms and signs, while in our study 90.8% medical students knew this fact [20]. Research in Turkey has shown that only one third of respondents were informed about asymptomatic carriers, which can be a significant risk of not recognizing the infection in both themselves and their partners [12]. The majority of female students in the medical sciences (97.5%) considered that treatment should be sought immediately if symptoms of a sexually transmitted disease appear, while this percentage was lower among future health professionals in a study conducted in Malaysia [20]. A large percentage of future healthcare professionals have heard of HIV, gonorrhea, syphilis, condyloma and genital herpes in a significantly higher percentage than respondents to

the previous studies [20, 21]. Our results are consistent with a study conducted among future healthcare professionals in India where good information was noted [22]. Also, respondents from non-medical fields were better informed in relation to similar studies conducted in Europe [21, 24]. The results of information on the concept of HIV infection are similar to those in the National Survey conducted in Serbia [10]. Our research showed a higher level of knowledge of the respondents when it comes to transmission routes, as well as misconceptions regarding transmission in relation to the research in Serbia conducted on respondents of similar age. Only one half of young people in Serbia knew how to identify the ways of transmitting and only 16.1% know the ways in which the infection is not transmitted [10]. 41% of respondents knew that a condom should be used during oral sex, while 27.7% thought that there was no need for that. Genital herpes can be transmitted by both herpes simplex virus type 1 (HSV-1) and herpes simplex virus type 2 (HSV-2) if a person is in contact with body fluids in lesions by exercising fellatio or cunnilingus [24]. Despite these scientific findings, only 38.6% of respondents believed that HSV could be transmitted through unprotected oral sex. More than half of the respondents (59.6%) had knowledge that cervical cancer is a consequence of HPV infection. According to the WHO, in 2018, over 280.000 deaths from cervical cancer due to HPV infection were confirmed annually among the female population, which could have been prevented [25]. Serbia takes the fourth place in the number of new cases and the third in mortality in the group of European countries. Every year, over 1.300 new cases are diagnosed in Serbia while approximately 500 women die. This makes cervical cancer the second leading cause of the disease and the fourth leading cause of death from all malignancies among the female population [26].

The results of the research indicate that the female students of medical educational profiles, in relation to their peers in non-medical fields, showed a significantly higher level of knowledge and awareness of the examined problem. This indicates the need to conduct health education work in the entire youth population because this group, according to the previous researches, represent more than half of the total number of infected [27].

Despite the fact that the female students from the group of medical sciences were better informed about sexually transmitted diseases, as future health workers, they should not have dilemmas and doubts towards the knowledge and attitudes in this field. Awareness of risky behaviors which are predisposing to the occurrence of sexually transmitted infections was high while adaptation to appropriate sexual behavior was low. There is a need to revisit the existing STD education curriculum in both schools and universities and implement targeted educational measures (STD-related information by health experts, online education and counseling via Serbian websites).

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