

What Do Young People from Mostar, Bosnia and Herzegovina Know about Contraception and Sexual Health?

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Aim. To determine the knowledge of adolescents living in Mostar, Bosnia and Herzegovina, about contraception and sexual health.

Methods. We used an anonymous questionnaire to survey a random sample of 120 high school students, 60 from two general high schools and 60 from a vocational school. There were 30 male and 30 female students aged 15-17 years from each type of school. The questionnaire consisted of 24 questions: 17 tested the students' knowledge on the menstrual cycle, contraception, emergency contraception, and sexually transmitted diseases (STDs), and six inquired how they obtained the information on these issues. Student t-test was used to test for score differences between male and female students, and between general high school and vocational school students in their general and specific knowledge. Pearson's r coefficient was used to test the correlation between average grades and knowledge.

Results. Female students had greater general knowledge ($t=3.69$, $df=118$, $p<0.001$), knowledge on contraception ($t=3.66$, $df=118$, $p<0.001$), and knowledge on STDs ($t=2.71$, $df=118$, $p=0.008$) than their male peers. General high school students also had greater general knowledge ($t=2.44$, $df=118$, $p=0.016$), and knowledge on contraception ($t=2.18$, $df=118$, $p=0.031$) or STDs ($t=2.36$, $df=118$, $p=0.020$) than their vocational school peers. Major sources of information were magazines (69%), TV/radio (50%), school (37%), and friends (36%). The most common reason that kept our examinees from obtaining information on these issues was shame (52%). The two most common contraception methods known to them were a condom (82%) and contraception pill (77%), whereas 17% of all students were unfamiliar with any contraception method. When asked what could be done to improve their knowledge on sexuality, contraception, and STDs, most students opted for the inclusion of sexual education into the school curricula.

Conclusion. Female students knew more about contraception and sexual health than their male peers. Young people should be provided with more information on sexual health.

Key words: adolescents; contraception; contraception, postcoital; sexually transmitted diseases; reproductive medicine

In many countries, sexually transmitted diseases (STDs) have emerged as one of the major public health concerns (1). According to the World Health Organization (WHO) estimate, there are 333 million new cases of STDs each year worldwide, of which 111 million affect people younger than 25 years (2). Adolescents are at the greatest risk of contracting an STD, especially high school students who are going through a sensitive period of their psychosocial development (3). Due to developmental challenges, adolescents often engage in risky sexual behavior (4). In Bosnia and Herzegovina, the 1991-1995 war and post-war circumstances could also add to risky sexual behavior of students (5). Data from Croatia show that 62% of boys and 35% of girls have had sexual intercourse before the age of 18 (6). Same source (6) states that 60% of adolescents do not use any contracep-

tion. One of the results of such behavior is an increasing number of unwanted pregnancies. Among the European countries, Great Britain currently has the highest unwanted pregnancy rate (7).

Knowledge is an important prevention factor for STDs and unwanted pregnancies (8). The aim of our study was to assess how much high school students from Mostar, Bosnia and Herzegovina, know about the contraception and sexual health, and to determine the factors that could contribute to the improvement of their knowledge on these issues.

Participants and Methods

Participants

One-hundred and twenty randomly selected first- and second-class students from two general high schools and one voca-

tional school (school for construction technicians) in the Mostar city area were surveyed during the 2002/03 academic year. Students were randomly chosen at each school by their identification numbers, separately for male and female students. There were 60 (30 male and 30 female) students from the general high schools and 60 (30 male and 30 female) from the vocational school. Students' median age was 16 (range, 15-19) years. There were no significant age differences between students from different schools or between boys and girls (data not shown). Most of the participants came from Mostar city area (89 out of 120). All students who were asked to fill out the questionnaire voluntarily participated in the study. Based on their school timetable, they were split in six groups and filled out the questionnaire during a 15-minute break between the classes.

Method

Our instrument was a questionnaire adjoined with the demographic data form (Web Table). The demographic data recorded for each student were age, sex, place of origin (city or village), and average midterm grades.

We used "Contraception and Sexual Health Questionnaire – YOR 800 038 134" (9). Questions were grouped in five sections to establish how much students knew about menstrual cycle (3 questions), contraception (4 questions), postcoital contraception (6 questions), STDs (4 questions), and how they obtained information about these issues (6 questions). There were three types of questions: multiple choice questions with a single correct answer, multiple choice questions where all the answers were correct and students had to check as many answers as they thought correct, and open-ended questions. Each correct answer added one point to the final grade, whereas questions with several correct answers brought as many points as there were correct answers.

We used a special grading strategy for the question No. 7: students were asked to rank the three safest out of six contraception methods on the list. We ranked these answers on the basis of available literature, ie, information availability (10), and assigned 2 points to each of the three safest methods (combined contraception pill, medroxyprogesterone acetate injection, and the so-called "mini" progesterone pill, which contains progesterone only), one point to the next two (subcutaneous hormone implant and condom), and half a point to the least safe one (interrupted intercourse – *coitus interruptus*). Points were summed up for each group of questions and for the total number of questions to obtain a cumulative score which reflected examinees' general knowledge.

Statistical Analysis

Kolmogorov-Smirnov test showed a normal distribution of data ($Z=0.947$, $p=0.331$). Therefore, parametric statistics (t-test and Pearson's r) was used to analyze the differences in scores between different groups of students (male/female and general/vocational high school), as well as for testing the possible associations between general knowledge assessed through the questionnaire and grade point average of a particular student. Chi-square test was used to compare frequencies of male and female students who knew about different STDs. Results were considered statistically significant on 95% level ($p<0.05$).

SPSS statistical package, Version 11.5.1 for Windows (2002, SPSS Inc., Chicago, IL, USA) was used for all statistical analyses.

Results

General Knowledge

On average, the students showed poor general knowledge on contraception and sexual health. Their knowledge was also relatively poor in each particular topic, except on the menstrual cycle, where their knowledge was somewhat better (Table 1). Female students showed greater general knowledge than male students. A similar difference was found between general high school students and vocational school students. Further, we found a significant positive correlation between the students' general knowledge and their grade point average ($r=0.20$, $p=0.037$).

Knowledge about Menstrual Cycle

No significant differences were found among the groups of students considering their knowledge about the menstrual cycle. Only 26 students (22%) knew that the middle of the menstrual cycle carried a greatest risk of pregnancy. Wrong answer was given by 57 students (47%), whereas 37 (31%) reported that they did not know the answer.

Thirty-eight students (32%) knew that women cannot get pregnant during the menstrual bleeding, whereas 52 (43%) gave the wrong answer and 30 (25%) did not know the answer. Most students (112 students, or 93%) knew that it was possible for a woman to get pregnant during her first sexual intercourse, whereas 3 students (2%) gave the wrong answer and 5 (4%) did not know.

Knowledge about Contraception

Female students knew significantly more about the contraception than male students. General high school students also knew significantly more than vocational school students (Table 1). A condom was the method of contraception most students knew about (98, or 82%). As many as 21 (17%) students were not familiar with a single contraception method (Figure 1).

Thirty-three girls (55%) and 23 boys (38%) knew that their physician would not tell their parents whether they came to seek information about contraception or not, whereas 21 girls (35%) and 20 boys (33%) were not sure, and 6 girls (5%) and 17 boys (28%) thought that the physician would inform their parents about their visit.

Knowledge about Postcoital Contraception

There were no significant differences among students in their knowledge about postcoital contracep-

Table 1. Knowledge of first and second class high school students from general high school and vocational school in Mostar (academic year 2002/03) about the menstrual cycle, contraception, emergency contraception, and sexually transmitted diseases (STDs)

Knowledge about	Theoretical range of points	No. of points (mean \pm SD)				
		all students (N=120)	girls (n=60)	boys (n=60)	general high school (n=60)	vocational school (n=60)
General	0-49	17.5 \pm 4.4	18.9 \pm 4.7*	16.1 \pm 3.6	18.5 \pm 4.9 [†]	16.5 \pm 3.7
Menstrual cycle	0-3	1.5 \pm 0.9	1.4 \pm 0.7	1.5 \pm 1.0	1.5 \pm 0.8	1.5 \pm 1.0
Contraception	0-18	6.5 \pm 2.2	7.2 \pm 2.2*	5.8 \pm 1.9	6.9 \pm 2.3 [†]	6.1 \pm 2.0
Emergency contraception	0-11	2.0 \pm 1.0	2.1 \pm 0.9	2.0 \pm 1.2	1.9 \pm 1.0	2.1 \pm 1.1
STDs	0-17	7.5 \pm 2.8	8.2 \pm 3.1*	6.8 \pm 2.3	8.1 \pm 3.1 [†]	6.9 \pm 2.4

*Statistically significant difference from male students, $p\leq 0.008$, t-test.

[†]Statistically significant difference from vocational school students, $p\leq 0.031$, t-test.

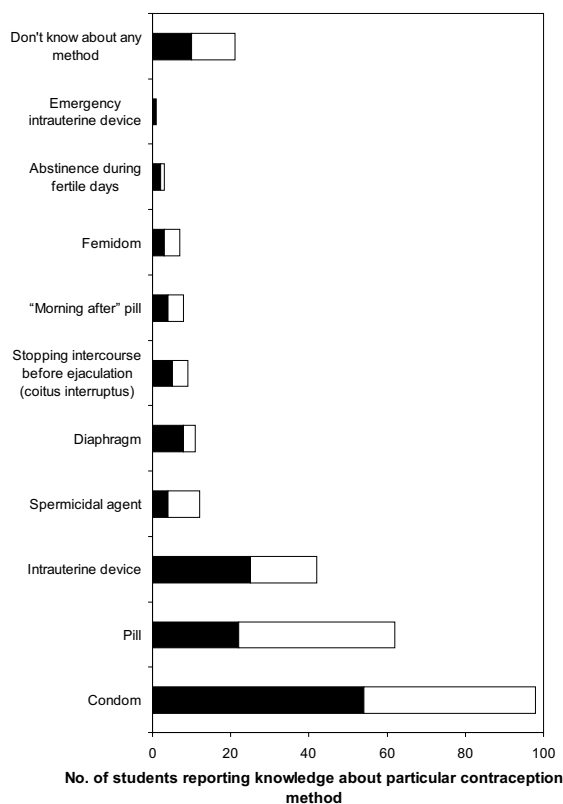


Figure 1. Responses of 120 first and second class students attending general high school or a vocational school in Mostar (school year 2002/03) to the question: "Which methods of contraception do you know?" Closed bars – girls; open bars – boys.

tion. None of the students knew that an emergency contraceptive pill should be taken within 72 hours from an unprotected sexual intercourse. A wrong answer was given by 31 girls (52%) and 25 boys (42%), whereas 29 girls (48%) and 35 boys (58%) did not know the answer. Only 2 students (3%) knew that an intrauterine device had to be introduced by a physician within five days after an unprotected intercourse.

Ten girls (17%) and 12 boys (20%) knew that a postcoital contraceptive pill was less reliable in prevention of unwanted pregnancy than a contraceptive pill, whereas 3 girls (5%) and 7 boys (12%) considered it to be more reliable.

Knowledge about Sexually Transmitted Diseases (STDs)

Girls, as well as general high school students, showed significantly greater knowledge about STDs than boys and vocational school students, respectively. When asked to name the STDs they heard of, 96 students (80%) mentioned the human immunodeficiency virus (HIV) infection and acquired immunodeficiency syndrome (AIDS), and the same number reported hepatitis B and C, which made these two diseases best known STDs in our sample of students.

The least known STDs were the *Chlamydia* infection and *Trichomoniasis*, listed by 23 (19%) and 9 (7%) students, respectively (Figure 2). A significantly

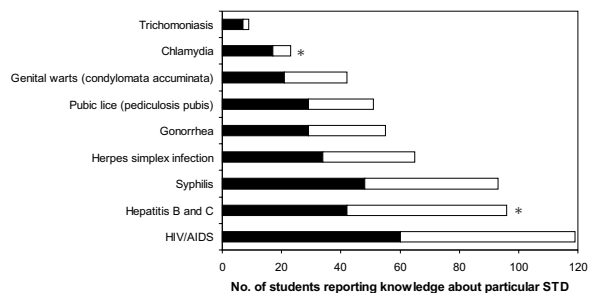


Figure 2. Responses of 120 first and second class students attending general high school or a vocational school in Mostar (2002/03 school year) to the question: "Which sexually transmitted diseases (STDs) do you know?" Closed bars – girls; open bars – boys. Asterisks indicate a statistically significant difference ($p < 0.05$).

greater number of girls knew about the *Chlamydia* infection, and significantly greater number of boys knew about hepatitis B and C (Figure 2). It made no sense to statistically evaluate the differences in knowledge about *Trichomoniasis* due to a small number of students reporting this knowledge.

When asked which contraception method also protects from STDs, 86 (72%) students correctly answered that it was a condom.

Sources of Information about Sexual Issues

Most students got the information about sex-related issues from magazines and only a single student reported getting the information from a family planning institution (Figure 3). When asked where they would go to seek information about contraception and sexual health, most students considered visiting a physician, whereas teachers in school were the least popular choice (Figure 4).

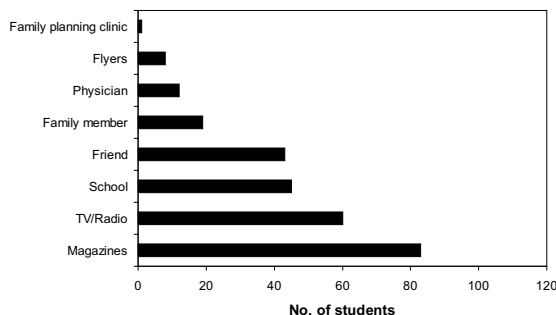


Figure 3. Responses of 120 first and second year students attending general high school or a vocational school in Mostar (school year 2002/03) to the question: "Where did you get the information about contraception and sexual health?"

Shame was the commonest reason that kept students from seeking information (62 students or 52%), whereas only five students (4%) claimed not to have any inhibitions in that respect (Figure 5). When asked to suggest actions that would improve sexual health, 58 students (48%) stated that sexual education should be introduced into the school curricula (Figure 6) and 6 students (5%) suggested establishing counseling institutions for the young people. Two students (2%)

proposed a premarital sexual abstinence to be the best way of ensuring sexual health.

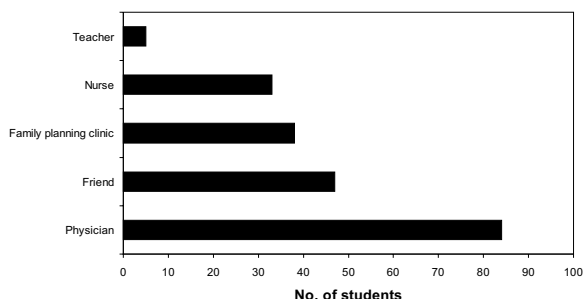


Figure 4. Responses of 120 first and second year high school students attending general high school or a vocational school in Mostar (2002/03 school year) to the question: "Whom would you ask for the information about contraception and sexual health?"

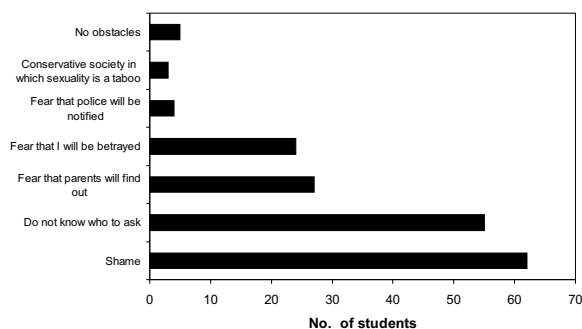


Figure 5. Responses of 120 first and second year high school students attending general high school or a vocational school in Mostar (2002/03 school year) to the question: "What are the obstacles that make you reluctant to seek the information?"

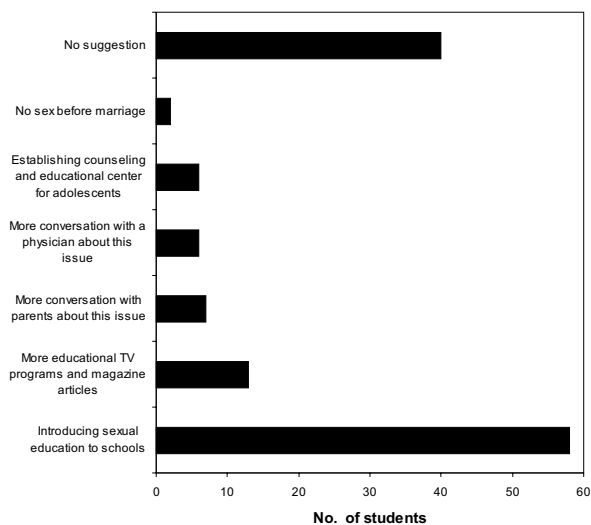


Figure 6. Suggestions of 120 first and second year high school students attending general high school or a vocational school in Mostar (school year 2002/03) for improving knowledge about contraception and sexual health.

Discussion

Our results showed that high school girls had greater general knowledge about contraception and sexual health than boys. Comparisons of scores on the different parts of the questionnaire revealed that this general difference was due to their greater knowledge about contraception and STDs. Similar results were obtained in a study that surveyed adolescents' knowledge in Norway (8) and in a study of adolescents' knowledge about STDs in Albania (11).

General high school students had greater general knowledge and more knowledge about contraception and STDs than their peers from a vocational school. This difference was probably due to science courses, such as biology, which are a part of the curriculum in general high schools but not in a vocational school.

A relatively small number of students (37%) gathered the information about sex-related issues at school, which is still greater than 25% reported in a study from Italy (12). Similarly to Italian students, our examinees mostly gathered their information from the magazines and TV/radio programs. The problem with those sources of information is that they bring unrealistic representation of sexuality and do not provide scientific information (13). Sex is mostly shown as a way of having fun, whereas the other side – responsibility – is usually neglected (14).

Most of our participants (48%) considered introducing sex education in schools helpful for improving general situation and knowledge among the adolescents. Adolescents in Serbia expressed similar opinions (13,15).

Physicians should participate more actively in the protection of adolescents' sexual health through education and counseling. Only 10% of students got the information from their physicians, although as much as 70% would like to get the advice from their physician. Shame was the main reason why students restrained themselves from talking to a physician about sexual matters, which may reflect an inadequate approach of physicians to their young patients and lack of institutionalized counseling that would allow adolescents to get the information about contraception and sexual health. The fact is that there is not a single place in Mostar where the young people can seek this kind of information. A similar study conducted in California, USA also revealed that the young participants got less information from their physicians than they wanted (16). As many as 47% of our examinees and 54% of those in the Californian study expressed their fear that a physician would inform their parents if asked for sex-related information.

Unlike Italian students, who said that their parents were an important source of information (12), our students stated that their parents did not play a significant role in that respect. Only 16% of our participants got the information from their parents and 22% were afraid of their parents finding out if they had asked other people, including physicians, for the information. It seems that parents tend to leave the sexual education of their children to schools, and schools

do not have a curriculum that would cover these issues. We should also mention the fact that the culture environment in Herzegovina is traditional, conservative, and of Roman Catholic religion.

The method of contraception best known to our participants was a condom (82%), which is congruent with the findings of other similar studies (13). Commercial advertisements and the fact that condoms are available in every drugstore are the most probable reason for this result.

Our participants knew very little about postcoital contraception, which is congruous with the data reported in the literature (17,18). None of the students knew that a postcoital contraception pill should be taken within 72 hours after an unprotected sexual intercourse, and only 2 students knew that a postcoital intrauterine device should be introduced by a physician within five days after an unprotected intercourse. One of the probable reasons for this lack of knowledge is, again, the lack of a structured and institutionalized transfer of information to the adolescents. On the other hand, practicing physicians who participated in a study by Burton and Savage (19) were also uncertain about the acceptability of the postcoital contraception, especially when used more than once. Establishing an institution for sexual health and counseling might help not only the adolescents, but also the physicians to learn more about these issues and become more competent in educating the whole community.

Most our participants heard about the HIV/AIDS, which is in accordance with studies published elsewhere (13). The most probable reason for this is that the HIV/AIDS problem is frequently talked about in the mass media. A very small number of students heard about the *Chlamydia*, which gives cause for concern because the results of a recent research showed an increasing rate of the *Chlamydia* infection among the adolescent population (20). Moreover, this infection can cause acute or silent salpingitis, which can lead to extrauterine pregnancies and infertility (21). This fact makes the knowledge about the *Chlamydia* infection even more important for adolescents. Our research showed that girls were better informed on the *Chlamydia* infection than boys. This can be explained by the fact that adolescent girls are at greatest risk of developing this kind of asymptomatic STD (22), so it is probable that they have heard about it from their friends or even have had the infection themselves.

In this research, we did not ask our participants whether they were sexually active or what methods of contraception they used, so we could not analyze our results in respect to these variables. Also, we did not compare the knowledge of our participants according to their place of origin because most of them (89 out of 120) grew up in an urban environment. Another limitation of our study was not taking into account the socioeconomic status and education of parents, even though they could be significant factors influencing students' level of knowledge. Further research should take these variables into account.

In conclusion, we must emphasize out the insufficiency of the Mostar adolescents' knowledge about contraception and STDs, which calls for action from all levels – parents, schools, and the health care system in Herzegovina, and most probably in the whole Bosnia and Herzegovina.

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