Summary

Introduction. The aim of this study was to investigate the sexual behavior, attitudes and knowledge on contraception, sexually transmitted infections and reproductive health among the youth in Bosnia and Herzegovina. Material and Methods. A prospective study included a sample of 6,000 subjects, aged 19 - 24, of both sexes, investigating the sexual behavior of the youth in Bosnia and Herzegovina in the period 2007 - 2009. Results. Of the interviewed examinees, 61% were sexually active, of which 56.4% had sexual intercourse with one partner (z = 28.51; p < 0.001). The average age of sexarche was significantly lower in males 17.34 ± 1.77 years, than in females 18.20 ± 1.84 years (z = -14.44; p < 0.001). Contraception was used by 67.6% at first intercourse, and by 70.4% at the last intercourse. The most common method of contraception was male condom (74%), coitus interruptus (11.1%), and oral hormonal contraceptives (14.9%). The examined subjects had inadequate knowledge (51.6%) about contraceptive methods, and it was significantly higher in males (64.6%) than in females (42.2%) (z = 10.17; p < 0.001). Some 4.9% of the sexually active females had intentional abortions. Up to 51.7% of females had never had a pelvic examination, and Pap test was done by 37.2%. The examinees obtained information about contraception and sexually transmitted infections from peers 50.7% and parents 9.7%. Only 28% of females had a positive attitude towards oral hormonal contraceptives. Conclusion. The interviewed young people in Bosnia and Herzegovina keep traditional sexual behavior patterns, attitudes and practices. However, more effort should be put into the improvement of knowledge on contraception, sexually transmitted infections, and healthcare protection.

Key words: Health Knowledge, Attitudes, Practice; Adolescent; Reproductive Health; Sexual Behavior; Contraception Behavior; Sexually Transmitted Diseases; Surveys and Questionnaires; Papnicolau Test

Introduction

Due to the economic transition process, the youth in Bosnia and Herzegovina (BiH) has been burdened with the socio-economic stratification and uncertainty, undefined new social roles, the “crisis of the family” and low moral values. Although the sexual behaviors of the youth in our country differ from those in other countries, in relation to the beginning of sex life, use of efficient contraception, specific fertility and the number of intentional abortions, their common de-
The contemporary reproductive health concept was established at the International Conference on Population and Development held in Cairo in 1994, as a state of complete physical, mental, and social well-being in all matters relating to the reproductive system in all stages of life [3]. The early beginning of sexual activity, accompanied by later marriage, is resulting in a prolonged period of sexual activity before realization of the reproductive function. This consequently increases the risk of reproductive health disorders [1, 4].

Risky sexual behavior among the young population, intentional abortions, and sexually transmitted infections (STIs), cause infertility and a decrease in the biotic potential of the population [4, 5].

The primary reasons for high incidence of pregnancies, abortions, and STIs at this age lie in the insufficient use of contraception, limited access to the services for reproductive health, high biological vulnerability, and negative social reactions towards youth sexuality [6, 7].

Apart from the research on the sexual behavior of high school students of the Tuzla Canton and a questionnaire on the knowledge on contraception among high school students in Mostar [8–11], there are no data on the reproductive health in the youth of BiH. There is also a report on the research on the youth conducted by the United Nations Development Programme (UNDP) in BiH in 1999, but the data are rather brief and general [12].

The recent studies indicate that the youth who receive information on sexual issues (discussion and education – traditional, through the media as well as the Internet) are more responsible and their exposure to sexual risks is significantly lower compared to their uneducated and sexually uninformed peers [13, 14].

The aim of this study was to investigate the sexual behavior, attitudes and knowledge on contraception, reproductive health, and STIs among the youth in BiH.

**Material and Methods**

A prospective study included a representative sample of 6,000 subjects, aged 19 - 24, of both sexes, and investigated the sexual behavior among the youth in BiH in the period 2007 - 2009.

The survey was conducted among the youth of both sexes in four largest university cities in BiH: Sarajevo, Tuzla, Mostar, and Banja Luka. The total sample included 6,000 subjects aged 19 - 24, of both sexes, with various education background and professions, from different places and types of residence. Out of the total number, 5,000 were full time students at five public universities in BiH (University in Sarajevo, University in Tuzla, University in Banja Luka, and two Universities in Mostar) enrolled at different schools and study groups. They were at different years of studies, living with their parents, at dormitories, or renting a flat. The remaining 1,000 subjects were high school graduates, of various professions or unemployed, living with their parents or renting a flat. None of the subjects were married or had children.

This prospective study included the research instruments (questionnaire) previously designed for a PhD thesis at the Medical Faculty in Tuzla, adapted to our research.

The first part of the questionnaire included data on the subjects’ demographic profile (time and place of birth, gender, profession, university, year of study and type of school, as well as the place and type of residence).

The second part of the questionnaire included data on the subjects’ sexual behavior (beginning of sexual activity, usage and knowledge on contraceptive methods, counseling on contraception and STIs). The third part of the questionnaire was intended only for the female subjects (3,492) gathering information on gynecological examinations, frequency of visits to the gynecologist and types of institutions at which they performed them, the number of intentional abortions, and the number of Pap smear tests.

The questions related to the knowledge on contraceptive methods were scored as follows:

- knowledge on one or no methods (insufficient) - 0 points;
- knowledge on two to three methods (weak) - 1 point;
- knowledge on more than three methods (satisfactory) - 2 points.

The sources of information on contraception and STIs were defined through nine offered options (school, friends, parents, healthcare workers, teachers, partner, TV, print media, Internet).

While conducting the survey, the subject sample included all female and male students who were present at lectures during the survey procedure and who accepted to participate. The survey was conducted by students – volunteers, previously educated on the procedure and the type of the survey. They first held a brief introductory session on the type and content of the questionnaire and gave instructions on how to fill in the questionnaire. The procedure typically lasted from 15 to 20 minutes. The survey was anonymous and approved by the university at which it was conducted.

The subjects who belonged to the group of non-students completed the questionnaire offered by volunteers of the AIDS Association, Youth Associations in Mostar and Sarajevo, Outpatient Clinic Banja Luka and Outpatient Clinic Tuzla. They were previously informed on the procedure and type of survey. The volunteers held a brief introductory session on the type and content of the questionnaire and gave instructions on how to fill in the questionnaire. The survey was anonymous and approved by the institution where it was conducted.
Standard methods of descriptive and inferential statistics were used. Quantitative data for sexarche were analyzed by ANOVA statistical procedure. Rank and range were used for quantitative data. Qualitative data were tested by the $c^2$ test and z-score to determine the statistical significance of differences. While testing the statistical hypotheses, the $p < 0.05$ was used as the criterion of significance. The programs Microsoft Office Excel (graphic presentation and statistical package) and Arcus QuickStat biomedical were used for statistical data processing.

**Results**

Out of the total of 6,000 subjects, there were 2,508 (41.8%) males and 3,492 (58.2%) females aged 19 to 24, with the average age of 21.5 years (Table 1). In terms of education, there were 2,128 male students and 2,872 female students, along with 380 male and 620 female high school graduates. The subjects mainly lived with their parents ($N =$ 3,042), rented a flat ($N =$ 2,000), or lived in dormitories ($N =$ 948). Out of 6,000 young participants in BiH, 3,659 (61%) were sexually active, without a statistical significance regarding gender (Graph 1). There were 2,062 sexually active subjects who had sexual relations only with one partner (56.3%) and this number was significantly higher ($z = 28.51; p < 0.001$) compared to those with two 23.7% ($N =$ 867), and those with more than three partners 20% ($N =$ 730) (Graph 2).

There were 16.3% ($N =$ 598) males who had more than three sexual partners, which is significantly higher ($z = 16.65; p < 0.001$) when compared to the females 3.6% ($N =$ 132).

The average age of sexarche in males was 17.34 ± 1.77, and 18.20 ± 1.84 in females, and it was statistically significantly lower in males in the entire BiH ($z = -14.44; p < 0.001$) when compared to females.

Out of the total number of sexually active participants ($N = $3,659), 67.6% ($N = $2,437) used contraception at the first sexual intercourse, out of whom 34.2% ($N =$ 1,250) were males and 33.4% ($N =$ 1,223) were females. However, the usage of contraception at the last sexual intercourse was 70.4% ($N =$ 2,576), out of whom 38% ($N =$ 1,391) were males and 32.4% ($N =$ 1,185) were females (Graph 3).

At the level of the entire BiH, the percentage of males who used protection at their last sexual intercourse was significantly higher than in females ($z = -5.31; p < 0.001$).

Most subjects, 74% ($N =$ 2,707) used condoms as the method of contraception (40% of males ($N =$ 1,463) and 34% ($N =$ 1,244) of females). About 26% ($N =$ 952) of examined subjects used some other method of contraception: 11.1% ($N =$ 408) used coitus interruptus, and 14.9% ($N =$ 544) of females used oral hormonal contraception. At the level of all cities of BiH, the proportion of males who used condoms was significantly higher than females who used condoms ($z = 17.10; p < 0.001$).

**Table 1. Distribution of subjects by gender in BiH**

<table>
<thead>
<tr>
<th>City/Grad</th>
<th>Girls/Devojke</th>
<th>Boys/Mladići</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sarajevo</td>
<td>790</td>
<td>460</td>
</tr>
<tr>
<td>Tuzla</td>
<td>679</td>
<td>571</td>
</tr>
<tr>
<td>Mostar</td>
<td>1247</td>
<td>1003</td>
</tr>
<tr>
<td>Banja Luka</td>
<td>776</td>
<td>474</td>
</tr>
<tr>
<td>Total/Ukupno</td>
<td>3492</td>
<td>2508</td>
</tr>
</tbody>
</table>
More than a half of the investigated youth in BiH, 51.6% (N = 3,097) showed insufficient knowledge on contraceptive methods, while only 7.9% (N = 473) showed adequate knowledge. The proportion of males in BiH who showed insufficient knowledge on contraceptive methods was 64.6%, and it was significantly higher when compared to females, 42.2% (z = 17.10; p < 0.001) (Graph 4).

Among the examined sexually active females in BiH (N = 1,788) there were 4.9% (N = 88) registered intentional abortions. Out of the investigated young females in BiH (N = 3,492) 51.7% (N = 1,805) had never visited a gynecologist, 23.7% (N = 829) only visited a gynecologist when they had problems, while 24.6% (N = 858) regularly visited their gynecologists. One third of the sexually active young females had a Pap smear test, which is 37.2% (N = 666).

The young seek and get most information on contraception and STIs from their peers (50.7%) and from their partners (33.7%), then from healthcare workers (14.9%), while the lowest percentage (9.7%) of them turn to their parents for information. Only one fourth of females (24.6%) knew about the Pap smear test and its purpose, while as many as 75.4% of females gave incorrect answers.

In regard to their attitude towards contraception and oral hormonal contraceptives, 28% of females had a positive attitude, 19% of them had a negative attitude, while more than half of them (53%) were indecisive and their answer was “I do not know”.

**Discussion**

One of the characteristics of the modern society is the increase in sexual activity among the youths. It may be assumed that in accordance with the contemporary world tendencies, sexual activity of the youths in BiH is also on the increase. Our data indicate that 61.0% of the young people in BiH have had a sexual experience, without a significant difference in gender, mainly with one sexual partner.

Sexually active young persons in BiH most frequently have their first sexual experience at the age of 17, and 18, in males and females, respectively.

The first registered data on the sexual activity of the young people in BiH are given in the report made by the UNDP in 2000, and they show that there are 62% of sexually active young people, which is almost identical to our results (61%).

The earlier study conducted among the adolescents in the Tuzla Canton indicated that sexarche in young males is at the age of 16, and 17 in young females [9], which is somewhat earlier when compared to our results. The study among the students in Mostar showed that there were 61% of sexually active subjects, and that females have their first sexual experience at the age of 18 and males at the age of 17, which is identical to our results [10].

The data on sexual activity of the young people in the neighboring countries (Croatia, Serbia, Slovenia, Montenegro) are similar to our data and are in the range of 42% to 84.0% [1, 5, 7, 15–17].

Also, the sexually active young people in these countries show a tendency to initiate sexual activities at an earlier age. young males at the age of 16, and young females at the age of 17, while the percentage of those who had their first sexual intercourse before the age of 15 ranges from 23.4% to 28.5% [1, 7, 14–20]. The study conducted in 44 countries indicates variations in the age of the first sex from 16.2 to 16.5 years of age (Norway, Sweden, and Finland) to 22.1 to 22.9 years of age (India and China) [4].

The number of female adolescents who had sex before the age of 15 in the United States accounts for 14%, in Canada, France and Great Britain for 40.9%, in Sweden 12%, Hungary 32%, Germany 36%, and in Switzerland for 40% [21–23].

The studies conducted at university cities both in the world and in the neighboring countries indicate the sexual activity of students ranges from 67.0% to 85.0% [6, 10, 16, 19, 24], which is similar to the results of the study conducted in BiH. Some authors believe that more educated young persons...
have their first sexual intercourse later than the less educated [15, 25–27].

The data on the number of sexual partners differ for the neighboring countries, but most studies conducted in these countries as well as in the world show that 10.2% to 29.8% of the sexually active young persons have had more than three sexual partners [1, 7, 16, 22, 23, 28].

When it comes to contraception, two thirds of the sexually active youth (67.6%) in BiH used contraception at their first sexual intercourse, while 70.4% of them used contraception at their last sexual intercourse. Condom is used by 74% of sexually active youth in BiH, while 26% of them use some other methods (11.2% of the young males use coitus interruptus, and 14.9% of the young females use oral hormonal contraceptives). The earlier studies done by the UNDP (2000) in BiH on the sexual activity of the youth found that 40% of the young people aged 15–25 used contraception, while studies conducted two years later showed that the incidence is 48%. Our data indicate a positive trend and an increased usage of contraception among the youth in BiH. However, it is significant that more than half of the examined youth (51.6%) did not have sufficient knowledge on contraceptive methods, males more than females. Also, data on the usage of contraception by high school students in the Tuzla Canton in 2003 showed a high usage of condoms (females 59.8% and males 63%), oral hormonal contraceptives (12.6% of the examined females) and coitus interruptus by 2.3% [9], as well as the study conducted among the students in Mostar, showing that 52.6% of subjects used contraception [10].

On the other hand, a large study performed by United Nations placed BiH into the group of countries with the lowest rate of contraceptive use among the women of reproductive age [29]. This study indicated a rather high rate of contraceptive use in the Scandinavian countries and the United States [29].

The situation in the neighboring countries is similar. The use of contraceptives at the first sexual intercourse ranged from 45.5% to 80% [5, 7, 14–17]. Our data on the use of condoms are rather similar to results of studies conducted in four countries in the Balkans (BiH, Macedonia, Serbia, and Montenegro) among the youth aged 12–24. Condoms were used by 73.7% of young male persons at the first sexual intercourse, and by 69% of young female persons, while religion, age or type of school had no significant effects [30]. The condom use in the neighboring countries ranged from 40% to 80% [1, 5, 7, 16–18, 24].

The results of an international study on the first sexual intercourse in France, Spain, and Belgium, showed that 75% of subjects aged 20–24 used some kind of protection, in Italy 74.0% and in the Netherlands 85% of students used protection and around 55.0% in Poland, Hungary and Latvia [28, 31]. On the other hand, in Romania, only 15% of the young female subjects aged 15–24 used contraception at the first sexual intercourse [32].

A high level of condom use (67.5% of the young female subjects and 70.7% of the male subjects) at the first sexual intercourse and 52% at their last sexual intercourse was registered in the United States [22].

Our data show that 4.9% of the sexually active females had an intentional abortion. The exact number of intentional abortions in BiH is not known, because a significant number of abortions are not registered and there is no unique system of registration. The results of the population cross-sectional study conducted in BiH in 1998 indicate that every third woman (aged 15 to 49) had an intentional abortion, and 7% of them had three or more abortions [33]. The data about the Tuzla Canton can mainly be found in the papers, for example on the incidence of adolescent pregnancies, which was between 3% and 5% [34, 35].

The rate of abortions among the females aged 20–24 in the European countries varies (Croatia 1.4%, Slovenia 1.6%, Hungary 3%, Italy 1.9%, Finland 2.9%, the Netherlands 8%), while the highest rate is still in Romania 78% [36, 37]. More than a half of the investigated youth (51.6%) have insufficient knowledge of contraceptive methods, whereby young male persons have significantly lower knowledge than females do. The earlier studies conducted in BiH also showed low knowledge on contraceptive methods, bearing in mind that the female subjects had better results than the males [9, 10]. The studies in the neighboring countries also found low level of knowledge on contraceptive methods, with female subjects having better scores, which is in accordance to our results [5, 10, 14, 17, 20]. The world studies also confirm that the knowledge on contraceptive methods is insufficient worldwide [23, 29, 38–40]. More than a half of the females surveyed (51.7%) in BiH never visited a gynecologist, while 24.6% of them regularly visited their doctors. The Pap smear test was done by 37.2% or one third of the sexually active females.

The findings of various studies on visits to gynecologist and Pap smear tests are rather diverse [28, 38, 41, 42]. However, all the studies pointed out the importance of visiting gynecologists for sexually active young girls, as well as doing medical tests such as Pap smear test, counseling on the use of contraception, and protection against STIs (Chlamydia infections and infections caused by human papillomavirus (HPV)) [39, 42, 43].

Significant indicators of reproductive health as well as the ability to assess future fertility are the pathological Pap smear test results, gynecological exams, and the frequency of Chlamydia infections, most spread STIs among the youth today.

The young population seeks and gets most information on STIs from their peers (50.7%), while only 9.7% turn to their parents. The results similar to ours are reported by other authors [1, 2, 11, 14, 40, 46]. When it comes to the attitude towards contraception and oral hormonal contraceptives, somewhat more than a quarter of the female subjects...
(28%) had a positive attitude while more than a half (53.0%) were indecisive (their answer to this question was “I do not know”).

Such attitudes of the young people and the ways they obtain information on sexual behavior and contraception are evident in other studies as well, which shows that young people mainly get information from their peers, whereas the least of them talk to their parents [1, 4, 29, 40, 46]. It is also important to mention that the negative attitude towards hormonal contraceptives is often the result of insufficient knowledge on contraception which results in fear and prejudice [20, 45].

Sometimes the most frequent sources of knowledge about contraception (peers, parents, media) are inadequate and may cause numerous consequences (harmful effects of modern contraception and the reliability of certain methods of contraception such as coitus interruptus). Most studies reveal that the knowledge the young people obtain about family planning often remains purely informational, while the knowledge on fertility and practical skills in applying certain methods are lacking [4, 46].

The obtained data indicate the increased sexual activity among the youth in BiH, high levels of contraceptive use at first and last sexual intercourse, and condom as a method of contraception for more than two thirds of the subjects, and only one sexual partner. However, the knowledge of contraceptive methods and STIs is still insufficient, as well as the awareness of the female subjects on the use of oral hormonal contraceptives, the need for regular visits to gynecologists and doing Pap smear tests. Therefore, appropriate education should be implemented through counseling centers and the media.

The earlier studies among the youth in BiH (performed by the United Nations Population Fund and UNDP) showed that the examinees had little information on STIs and how to prevent them, as well as limited knowledge or complete lack of understanding pregnancy and personal sexuality. Hence, regardless of the knowledge of contraceptive methods, they did not have enough knowledge on their use and role in preventing STIs.

The lack of counseling centers and a National strategy for the protection of reproductive health in BiH is the greatest problem. Young people obtain knowledge on reproductive health through general school programs, media, Internet, and their peers, while very little information are provided by the healthcare and education system. Some cities have counseling centers for the young, non-governmental organizations (XY Association) and student polyclinics within the gynecology departments.

We believe that the National plan for the protection of reproductive health of the youth needs to be adopted. However, this should be done after studying the reproductive health and risky sexual behavior among the youth, which may help in planning, education, and actions.

The fact that more than nine years have passed since the study was conducted may be seen as its limitation. Also, this period may be a limiting factor in validating the questionnaire used in the study.

**Conclusion**

The results of the research about the sexual behavior of youth in Bosnia and Herzegovina indicate an increase in sexual activity, a high rate of contraceptive use at the first and last sexual intercourse, condom as a method of contraception in more than two thirds of subjects, as well as only one sexual partner. However, the knowledge of contraceptive methods and sexually transmitted infection is still insufficient, as well as the awareness of the females on the use of oral hormonal contraceptives and the need for regular visits to gynecologist and doing Pap smear tests. Therefore, appropriate education should be implemented through counseling centers and the media.

Our study showed that the young people in Bosnia and Herzegovina, unlike the young in the countries of the Western Europe and the United States, do keep the traditional behavior patterns, attitudes and practices to a certain extent.

**References**


