

Research of Risk Behaviour With Regard to HIV Prevalence in Groups at Increased Risk



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Partnerships in Health - Sarajevo,
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Infectious Diseases Clinic of the University Clinical Centre Tuzla
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AUTHORS

Preface

Data and its analysis are necessary for better understanding of the nature of AIDS epidemic and preparation of an adequate response to the epidemic. It is the shared goal of all stakeholders involved in fighting HIV and AIDS globally, and at the same time a reason to conduct this research. While preparing and conducting the research, our plan was to obtain the standards of the quality of work on prevention of the AIDS epidemic spreading in Bosnia-Herzegovina, as well as the guidelines for future activities.

Results of the research indicate that all the stakeholders can be proud and satisfied with the results achieved. Despite the satisfaction with the results, we must not forget that behind each number and percentage, there is a human being in need of protection from HIV. In order to protect each and every individual, we must not neglect any area of response to HIV and AIDS, we must continue the efforts on prevention.

By publishing this research, we want to stimulate the scientific and research activities in the country and the region; we encourage every person interested to use the collected data for further analysis, reminding them of the duty to respect copyright and of the practice to list the publication in the references.

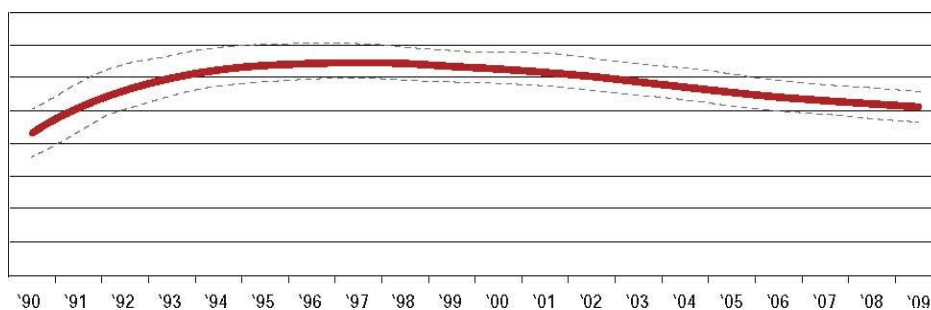
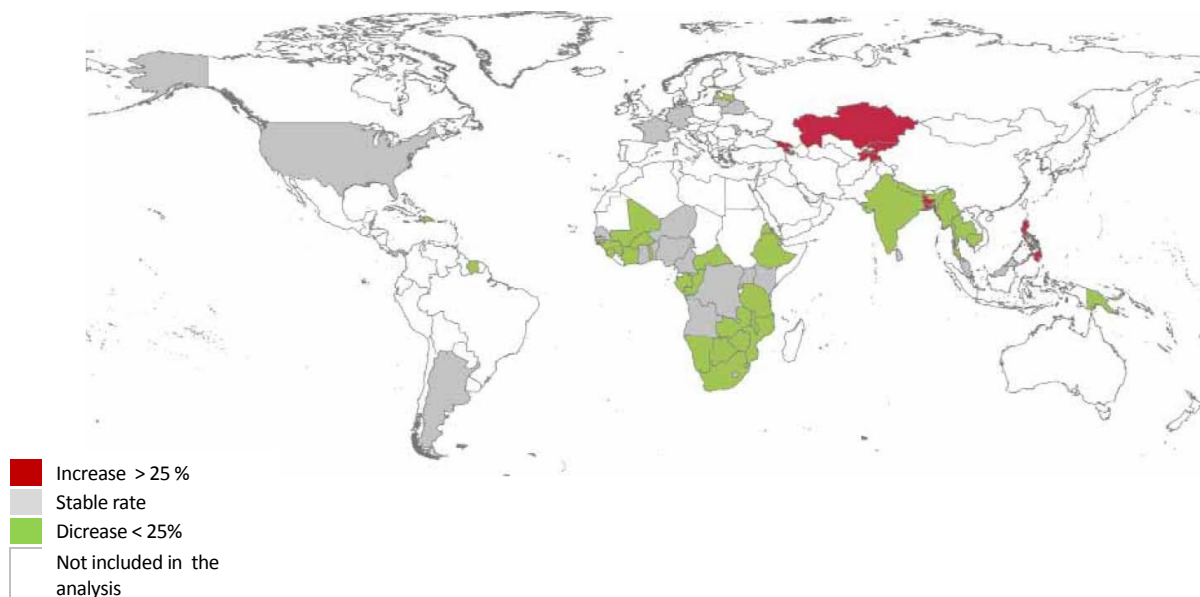
We sincerely hope that this publication will successfully present to you the scope of epidemic the entire world is facing and the situation with the epidemic in Bosnia-Herzegovina and in the Central Asia and Eastern Europe regions.

Partnerships in Health

Introduction

“The overall growth of the global AIDS epidemic appears to have stabilized. The annual number of new HIV infections has been steadily declining since the late 1990s and there are fewer AIDS-related deaths due to the significant scale up of antiretroviral therapy over the past few years. Although the number of new infections has been falling, levels of new infections overall are still high, and with significant reductions in mortality the number of people living with HIV worldwide has increased.¹

Changes in HIV incidence between 2001 and 2009.²
(selected states)



Trend of increase in the number of new HIV infections.³

¹ UNAIDS, Report on the global AIDS epidemic 2010 http://www.unaids.org/globalreport/Global_report.htm

² Ibid.

³ Ibid.

In 2010 report on the global AIDS epidemic, the UNAIDS estimates that 33,300,000 people around the world currently live with HIV. Comparison with the estimates of 28,600,000 people living with HIV, made in the 2001 report, gives an indication on the epidemic's growth. Unfortunately, the Central Asia and Eastern Europe regions, which include Bosnia-Herzegovina, continue to have the biggest regional increase in the HIV prevalence in the world.

“In Eastern Europe and Central Asia, the number of people living with HIV has almost tripled since 2000 and reached an estimated total of 1.4 million in 2009 compared with 760,000 in 2001.⁴” At the level of the region, prevalence higher than 1% is present in two countries only, the Russian Federation and Ukraine, although the prevalence increased in several countries of Central Asia. Such growth of HIV prevalence is linked to risk behaviour, primarily among injecting drug users.

Epidemic in Central Asia and Eastern Europe is characterised by its concentration in specific populations, mostly among injecting drug users, sex workers, persons whose partners are sex workers, and, to a considerably smaller extent, among men who have sex with men. Estimates are that as much as one quarter of 3.7 million injecting drug users in the region who are HIV infected, are mostly men. High HIV prevalence was found among the prison population, so, for example, estimates are that in Ukraine, there are 10,000 HIV infected inmates. UNAIDS statistics indicates there is a correlation between different risk behaviours, such as sex work and injecting drug use, observed on example of 30% of female sex workers in the Russian Federation who are injecting drug users, and high rates of HIV infection among female sex workers in Ukraine. Unprotected sex among men who have sex with men is *responsible* for the minor number of new infections in the region – below 1%. Also, number of HIV positive women in this region is growing. AIDS-related mortality at the level of the region is continuously rising.

Bosnia-Herzegovina is among countries with low epidemic level, which means that the HIV infection rate in the general population is below 1%, that is, below 5% in any of the increased-risk groups (men who have sex with men, injecting drug users, female sex workers, etc.).

From 1986, when the first case of HIV infection was documented in BiH, until the end of 2010, 170 persons diagnosed with HIV infection were registered in BiH. AIDS developed in 109 of them.

⁴ UNAIDS, Report on the global AIDS epidemic 2010 http://www.unaids.org/globalreport/Global_report.htm

Of the total number of registered persons, the largest number of them were infected through heterosexual intercourse (57%), followed by homosexual intercourse (17%) and injecting drug users (12.7%).

Subpopulations exposed to the increased risk of HIV and other sexually transmitted infections – men who have sex with men (MSM) and sex workers (SW), represent a potential danger in terms of the further spreading of the infection, that is, they represent a kind of a “bridge” to the general population due to high-risk behaviour and insufficient knowledge and awareness of the risks of HIV and STI. In view of the fact that it is a “hidden” population difficult to reach, knowledge and understanding of those “sex networks” in BiH is limited, social and epidemiological context of their exposure to the risk of HIV and other sexually-transmitted infections is insufficiently known. Bio-behavioural study (BBS) enables adequate approach and techniques for realistic assessment of the type and degree of both risk and protective behaviour of the vulnerable subpopulations.

HIV supervision is adjusted to the current status of the epidemic. BiH is a country with low level of the epidemic, and under the recommendations of WHO⁵, supervision is needed in the population whose behaviour brings risk of HIV infection.

Sero-survey should monitor the trend of HIV infections in those groups, while monitoring of the behaviour should focus on following the behaviour and understanding the links between the population under risk and the populations that are not directly exposed to risk. Bio-behavioural collection of data (2nd generation of monitoring) enables detection of the population not yet infected but under the risk of infection. BBS contributes to establishment and further strengthening of the 2nd generation of monitoring HIV and AIDS, which will continue monitoring the key behavioural and biological trends in the subpopulations particularly exposed to the risk of HIV/STI.

Monitoring, prevention and treatment of HIV infection and AIDS is a continuous process in BiH. It is considerably contributed to by a programme supported by the Global Fund, “Coordinated National Response to HIV/AIDS and Tuberculosis”, whose general goal is to keep the low rates of HIV incidence in BiH, increasing access to high-quality services and reduction of stigma and discrimination that HIV and AIDS face.

⁵ World Health Organisation

Previous bio-behavioural study was conducted in 2008 on a sample of MSM and SW populations. This report presents results of the research conducted in 2010 on a similarly structured sample, with comparative analysis of data on key behavioural and biological indicators of the target populations in these two researches. These indicators provide key information on socio-demographic characteristics, risk behaviour, that is, protective behaviour, the rate of HIV, HCV, HVB and syphilis infections for each target population.

Goal of the information presented in this report is to raise the level of understanding of the social and epidemiological context of the types of behaviour related to the risk of exposure to HIV/ST infections, to identify specific types of behaviour that need to be changed and to secure data for designing promotional-preventive programmes in the community.

Study's objective

Overall objective of the study is strengthening the 2nd generation of monitoring, updating the measuring of key behavioural and biological indicators and testing the methodology of bio-behavioural research planned to be conducted every two years, which contributes to strengthening the institutional capacities in the area of research.

Specific goals:

- Examine the socio-demographic and cultural characteristics in relation to the relevant risk behaviour of the target subpopulations;
- Examine the knowledge, attitude and behaviour in relation to HIV/STI in the subpopulation groups of SW and MSM;
- Estimate the HIV /ST infection prevalence in two groups that are at increased risk of HIV/STI: female sex workers (SW) and men who have sex with men (MSM);
- Assess the HIV/STI presence in the population aged between 15 and 24;
- Examine the knowledge, attitude and behaviour in relation to HIV/STI in the subpopulation groups of SW and MSM aged between 15 and 24; and
- Complete the set UNGASS indicators.

Methodology and the examinees

The research was conducted as a study of a cross-section of the population of female sex workers (SW) and men who have sex with men (MSM).

Research in the field, application of a standardised questionnaire (using the method of interview) and blood sampling for lab tests for HIV, HCV, HBV and syphilis, comprised 248 examinees in the MSM subpopulation, and 154 female examinees in the sex workers subpopulation.

Target population

Target population is the population located by mapping, it is not necessarily a resident population, and it is made of:

- *Female sex workers* – defined as females offering sexual services for money or other value (narcotics for example);
- *Men who have sex with men* – defined as any male who was involved in sexual activities with another man;

Location of the research

The study was conducted in major cities in BiH: Sarajevo (MSM, SW), Tuzla (MSM, SW), Zenica-Travnik (SW), Mostar (SW), Banja Luka (MSM, SW), Bijeljina (MSM, SW), Prijedor (MSM, SW). All the places were selected on the basis of estimated presence of high-risk groups, availability of outreach workers, involvement of NGOs and availability of reliable information.

Sample framework

a) Sex workers (SW=154)

Inclusion criteria:

- That she is self-identified as an SW,
- That she provided a paid sex services (penetrative sex) in the past 12 months,
- That she is over 16
- That she participates in the study with informed consent to HIV/STI testing

b) Men who have sex with men (MSM=248)

Inclusion criteria:

- That he is self-identified as an MSM
- That he had anal intercourse with a man in the past 6 months
- That he is over 16
- That he participates in the study with informed consent to HIV/STI testing

Sampling methodology

Both samples were selected applying the “Snowball” sampling method.

Following the prior collection of quantitative and qualitative data from various sources (secondary data of various services – census, police, NGOs and others dealing with that population) that were used to define the geographical area inside which the target population (SW and MSM) can be found, preliminary qualitative research was conducted that meant area mapping, that is, detection and establishment of contacts with the target group’s “social network” (neighbours, bar tenders, receptionists, NGO activists, medial workers-gynaecologists, dermatovenerologists).

After the contact was established, certain number of the target population members who meet the inclusion criterion was selected. They were the initial source of information through which other “members” who would join the sample were reached (provided that they meet the inclusion criteria).

Research timeframe

The research was conducted between November 2010 and February 2011, while the preliminary results were delivered in January 2011.

Research team

Majority members of the research team had research experience, with additional staff being provided through cooperation with NGOs, whereas local medical staff was involved too. Before the field research began, locations suitable for polling and blood sampling were defined. Field work with both target groups was done by previously trained mobile field teams comprising a medical supervisor, an interviewer and a medical professional.

The following persons participated in the research:

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Marija Zeljko, M.D.

Stela Stojisavljević, M.D.

Preparation and field work

The selected examinees completed a poll, and once they gave their informed consent, their blood sample was taken to be tested for HIV, HCV, HBV and syphilis.

Standardised questionnaire was used for the interview. Polling was voluntary, examinees could refuse or end the interview whenever they wanted. Examinees were previously explained that polling was anonymous, confidential and that all information and the interview would remain confidential. Testing was preceded by counselling. Examinees from both samples received certain material compensation for their participation in the research, and the amount of compensation depended on whether the questionnaire was completed and sample taken. Due to the sensitive nature of HIV and AIDS, consent to participation in the study was verbal, to give the participants better protection, but was confirmed by interviewer's signature on the form of informed consent.

The questionnaire was coded. The same code was used for the blood sample (5 ml) taken after the informed consent was given, immediately after the poll. Along with the accompanying referral note carrying the identification code same as the one on the questionnaire, the sample was taken to the laboratory of the Clinical Centre previously agreed on. Samples were tested using ELISA tests of the new generation. The examinee received the contact number at which (s)he could, should (s)he wish to do so, within 15 days (depending on the laboratory conducting the analysis), enquire about the possibility of finding out the results and potentially receiving counselling after the testing.

Supervision of activities

During the field phase of research, there was continued supervision of activities through ensuring intensive coordination of work of all those involved in the research.

Ethical principles

The research protocol and the questionnaires were delivered to the ethics commission in order to secure agreement to conduct research that would not violate the dignity and the right of examinees to protection of privacy, and the commission established that the research was in harmony with the principles of the Helsinki Declaration. Ethics of the research was ensured through the examinees' informed consent.

Collection, processing and statistical analysis of data

After the collected questionnaires were processed logically and entered into a Microsoft Access 2000 database, SPSS for Windows programme was used for the statistical analysis (version 13.00, SPSS INC, Chicago, Illinois, SAD)

Methods of descriptive statistics were used in the data processing. Data was shown as a frequency and percentage for the category variables, median and range for the ordinal, and, depending on the distribution of data, mean value and standard deviation for the continuous variables. Chi-square test was used for testing the difference between the groups, whereas the level of probability of $p < 0.05$ was taken as statistically significant.

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M S M

population

Results - MSM population

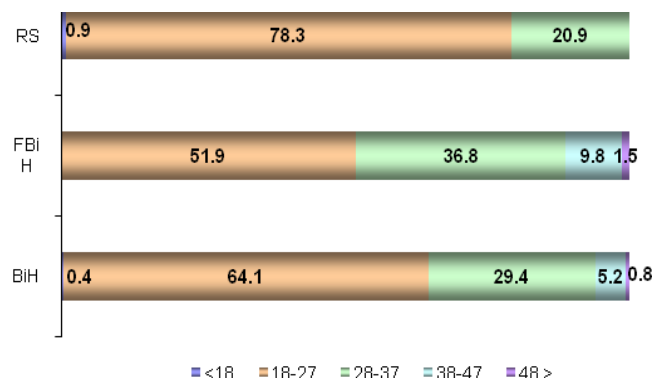
Socio-demographic characteristics

In the total sample of 248 examinees whose average age is 26.7 years (standard deviation 5.91, range between 17 and 58), and who are mostly part of the urban population (94.3%), 98.8% are BiH nationals who have been living in their place of residence for more than a year (over 20 years on average, median 23).

Geographical structure of the sample: Sarajevo (82), Tuzla (41), Banja Luka (83), Prijedor (26), Bijeljina (6).

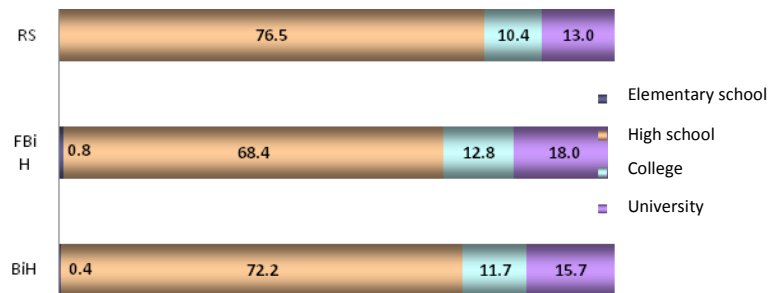
Majority of the examinees are under 27 (64.1%), particularly in the Republika Srpska subsample (78.3%) (Graph 1).

Graph 1: Examinees' structure by age groups



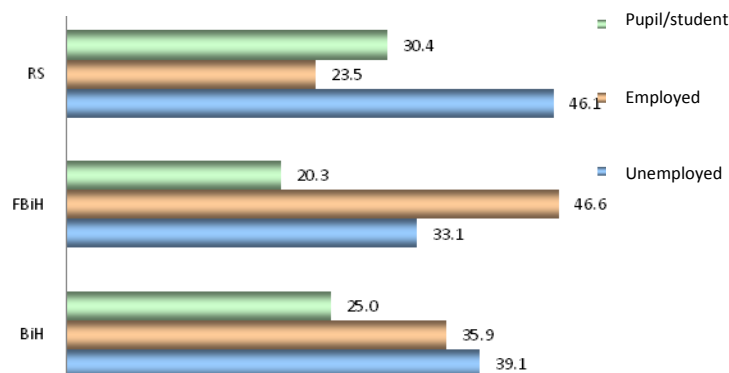
As to the level of education, majority of examinees completed high school (72.2%), which is statistically significantly more than in the previous study ($p < 0.002$), but there are less of those who graduated from college or university (Graph 2).

Graph 2: Examinees' structure by level of education



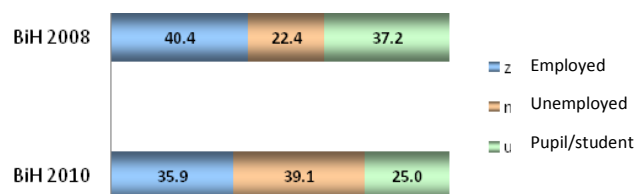
Examinees' structure by employment shows higher rate of employment in the Federation of BiH (46.6%) in comparison to the examinees in Republika Srpska (23.5%); (Graph 3).

Graph 3: Examinees' structure by employment status



Of the total number of examinees, 39.1% of them are unemployed (pupils and students not taken into account), which is statistically significantly more ($p < 0.001$) than in the previous research (22.4%); (Graph 4).

Graph 4 : Examinees' structure by employment status (2008/2010 collaterally)



Over 80% of examinees are bachelors, with the percentage being a little higher in Republika Srpska (88.7%) than in the Federation of BiH (74%), 11% of them live with a partner (Federation of BiH 14.5%; Republika Srpska 7.0%).

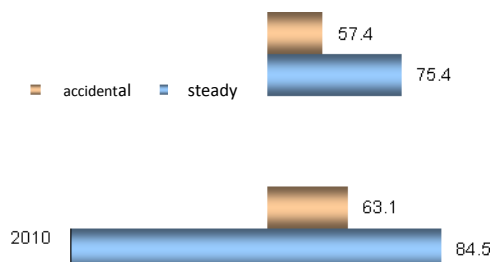
Sexual behaviour

Examinees report that the average age when they had the first anal intercourse with a man is 19 (standard deviation 3.66, range between 11 and 31). 74.2% of them say that in the past six months they were the inserting partner of 3 different men on average, 63.3% of examinees say that in the past six months they were the receptive partner of 3 different men.

In comparison with the previous research (in 2008), statistically significantly larger number of examinees (84.5%) say that in the previous six months, they had anal sex with a steady partner ($p < 0.05$), with two different steady partners on average (Graph 5).

Examinees say that during the previous month, they had eight anal intercourses with a steady partner on average.

Graph 5: Sexual intercourse with a steady/accidental partner, 2008/2010 collaterally



Condom use

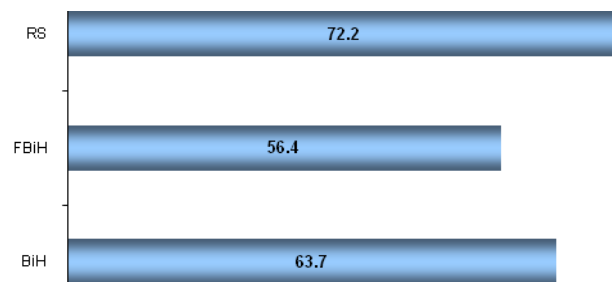
Examinees who had anal sex with men in the past six months used a condom in 23% of cases, the percentage being a little higher in the Federation of BiH (27.8%) than in Republika Srpska (18.2%), while 16.9% of them say that during that period they never used condoms with a steady partner, more in the Federation of BiH (23.3%) than in Republika Srpska (10.2%).

According to the results, 63.1% of examinees had anal intercourse with an accidental partner in the past six months, which is slightly more than in the previous study (57.4%), without statistically significant difference (p. 0.264).

They had 3-4 different accidental partners on average, with 3 anal intercours in the past month on average.

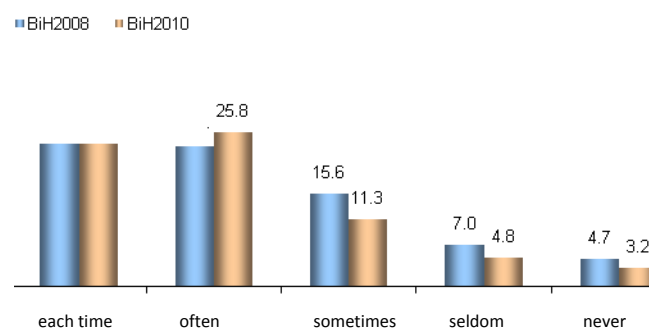
During the last anal intercourse with a male partner, 63.7% of them used a condom (FBiH, 56.4%, RS,72.2%); (Graph 6).

Graph 6: Condom use during the last anal intercourse with a male partner (affirmative answers)



When asked about the condom use frequency when having anal intercourse with an accidental partner, 54.8% of examinees answered that they had used a condom each time, which is more than in the previous study (49.2%).

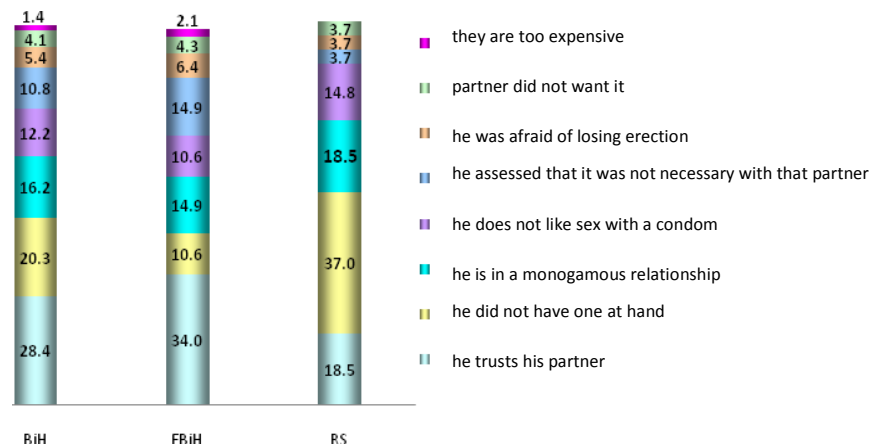
Graph 7: Condom use in the past 6 months, accidental partner (2008/2010 collaterally)



That percentage is higher in the subsample of the Federation of BiH (64.2%) than in Republika Srpska (47.9%).

The largest number of examinees list the following reasons for not using a condom during the last anal intercourse with a man: “condom was not at hand” (37% examinees in Republika Srpska), that is, “they trust the partner” (34% examinees in the Federation of BiH); (Graph 8).

Graph 8 : Reasons for not using a condom during anal sex with a man



Of the total number of examinees, 14 (5.9%) of them say that they had commercial male partners/female partners in the past six month, 9 of them had male partners, while 5 had both male and female partners.

Eight of them used a condom during the last anal intercourse with a commercial male partner/female partner.

Majority of examinees (89.5%) reports practising oral sex with a male partner in the past 6 months, with 3 different partners on average, and over 85% of them do not use a condom. Only 8.6% of them report using a condom during the last oral sex they had.

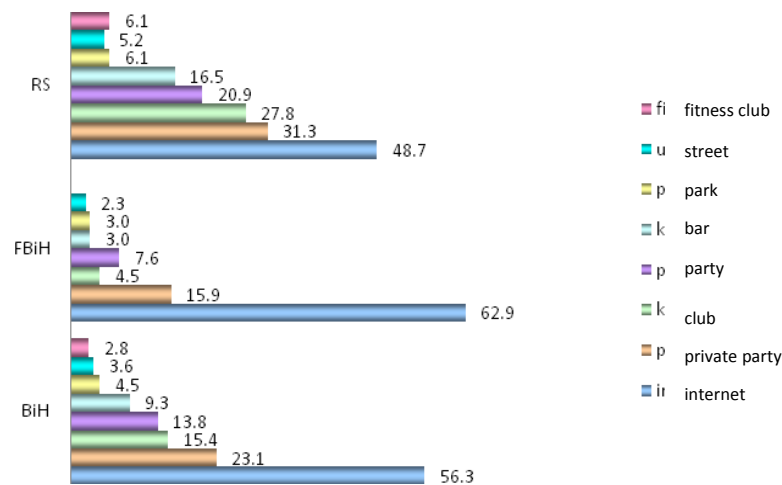
Location of meetings and sexual contacts

When asked if they knew personal details of their last sexual partner, 80.6% of examinees confirmed they did – which is a little less than in the previous study (82.1%).

The largest number of examinees (40) say they know 10-20 persons of the same sexual orientation by their full name, 28 on average (standard deviation 43.57, range between 1 and 600). This data may serve to assess the social and sexual networks and describe the risk behaviours of its members

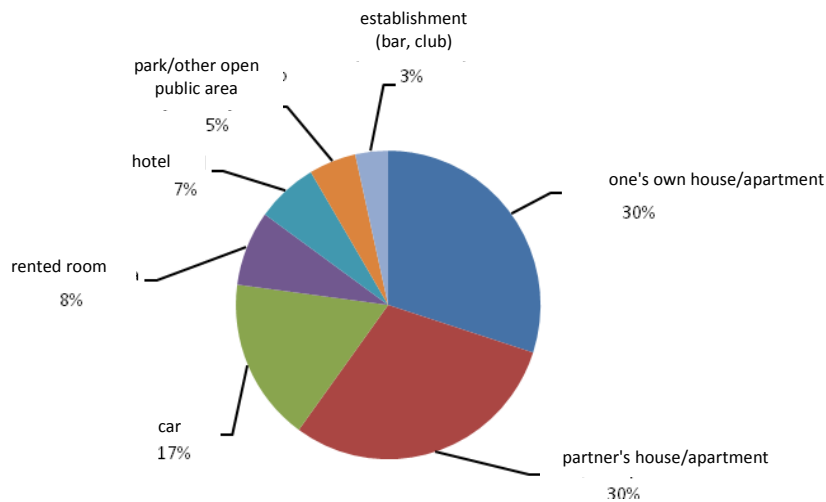
The most common location and manner of establishing contact with male partners is, similar to the results of the previous study, internet (56.3%), particularly among the examinees in the Federation of BiH (62.9%), in the RS it is 48.7%, while, in comparison with the previous study, statistically significantly less common are private parties with 23% (X2 7.536 p. 0.006) and a club/disco club with 15.4% (X2 16.71 p<0.001); (Graph 9).

Graph 9: Most common locations for finding a male partner



One third of examinees report that they never go to places where MSM population generally meets, while 8.9% of them frequents those places several times a week.

Graph 10: Most common places for sex



Similar to the results of the previous study, examinees most often list their own house/apartment, that is, partner's house/apartment (62.9%) as a place for sex with a male partner in the past six months, followed by a car (35.9%).

One third of examinees experienced some sort of violence – sexual 6.9% (which is statistically significantly more than in the previous study, $p < 0.001$), and physical abuse 11.3%, which is a bit more than in 2008 (9.4% of examinees). The number of those who suffered physical abuse (19.8%) is reduced in comparison to the previous study (32.3%).

Use of lubricants

Almost 90% of examinees used a lubricant during anal sex in the past six months, mostly water-based, factory-made ones (57.5%), but 27.4% of them used it each time, 43.1% of them often, while 5.6% of them did not use lubricant at all during that period.

Bisexual sex

Over one half of examinees (55.4%) report having sex with a women, which is statistically significantly less ($X^2 7.685$; $p. 0.006$) than in the previous study (68.3%). 11 examinees report having five or more different female sexual partners in the previous 12 months.

Of 128 of those who answered the question, 20.2% of them are currently in a relationship with a woman.

Of 101 examinees reporting sex with a woman, 59 of them (58.4%) used a condom during their last intercourse (which is slightly more than in the previous study (55.2%)).

Risk sexual behaviour

Over 17% of examinees reports practising group sex in the last six months. 76.9% of them report having sex under the influence of alcohol during the same period, which is statistically significantly more ($p<0.001$) than in 2008 (58.8%), while 31.5% had sex while under the influence of narcotics.

Table 1 Knowledge of HIV/STI and self-assessment of risk, total MSM sample

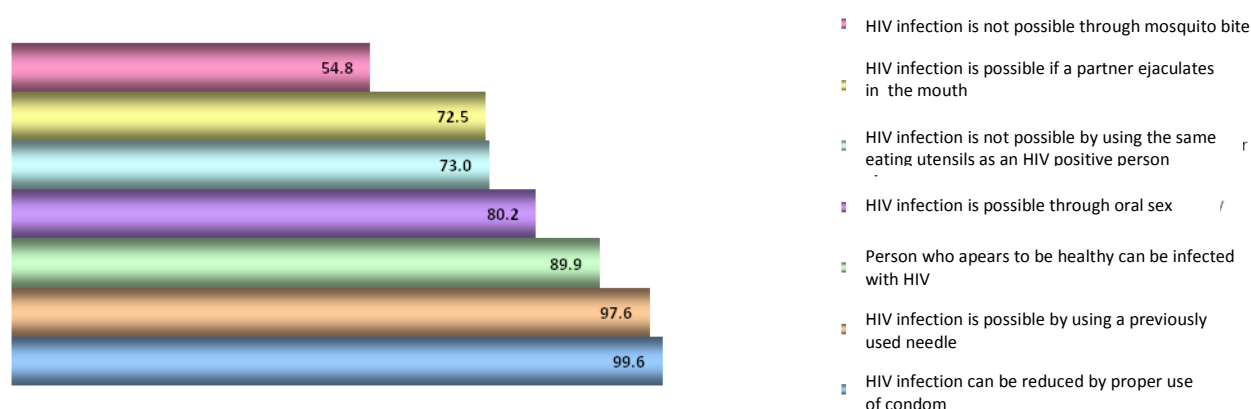
Questions	BiH 2008	BiH 2010
<i>Risk of HIV infection can be significantly reduced by proper use of condom</i>	n=224	n=248
yes	98.2	99.6
no	1.3	-
does not know	0.4	0.4
<i>Person who appears to be healthy can be infected with HIV</i>	n=223	n=248
yes	83.4	89.9
no	4.0	4.4
does not know	12.6	5.6
<i>HIV infection is possible by using the eating utensils used by a person infected with HIV</i>	n=223	n=248
yes	9.4	11.3
no	74.4	73.0
does not know	16.1	15.7
<i>HIV infection is possible by using a previously used needle</i>	n=223	n=248
yes	99.6	97.6
no	-	1.6
does not know	0.4	0.8
<i>STI is possible through oral sex</i>	n=221	n=248
yes	70.6	80.2
no	11.3	7.3
does not know	18.1	12.5
<i>HIV infection is possible if a partner ejaculates in the mouth</i>	n=223	n=247
yes	66.4	72.5
no	12.1	8.1
does not know	21.5	19.4
<i>HIV infection is possible through mosquito bite</i>		n=248
yes		11.3
no		54.8
does not know		33.9
<i>Knowledge of partner's HIV status (current or previous)</i>	n=223	n=248
He never tested for HIV	27.8	21.8
He is HIV positive	0.4	-
He is HIV negative	27.4	34.7
They never discussed the matter	44.4	43.5
<i>Self-assessed risk of HIV infection</i>	n=224	n=247
There is no risk	16.5	21.5

The risk is small	49.6	51.8
The risk is moderate	24.1	21.1
The risk is great	9.8	5.7

n = number of examinees who answered the question posed

In spite of multiple sexual partners, inconsistent, incorrect use of condoms, when asked about self-assessment of the risk of HIV infection, the largest part of examinees (51.8%) believes that the risk is small, 21.5% of them believe that there is no risk (which represents an increase in comparison to 2008), while the percentage of those who assess the risk to be great (5.7%) is reduced in comparison to 2008 (9.8%).

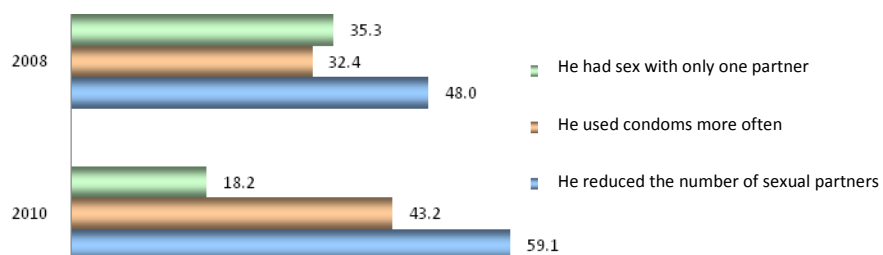
Graph 11. Knowledge about HIV infection



Over 99% of examinees is aware that the risk of HIV can be reduced by proper use of condoms, 89.9% of them knows that a person who appears to be healthy can be infected with HIV, majority of the examinees do not know the HIV status of their partner because the partner never got tested (23.3%), that is, they never discussed the matter (37.9%).

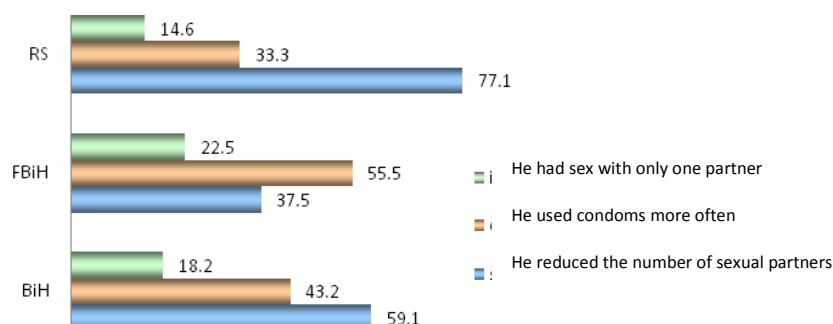
When asked what they changed in their sexual behaviour in the past six months in order to reduce the risk of HIV infection, most of the examinees (59.1%) said that they had used condoms more often, that is, that they had reduced the number of sexual partners (43.2%); (Graph 12).

Graph 12: Changes in sexual behaviour, BiH, 2008 and 2010 collaterally



Broken down by entities, there is bigger percentage of examinees in Republika Srpska who report reduction in the number of sexual partners, whereas there is bigger percentage of examinees in the Federation of BiH who report more frequent use of condoms.

Graph 13: Changes in sexual behaviour, 2010, BiH and entities collaterally

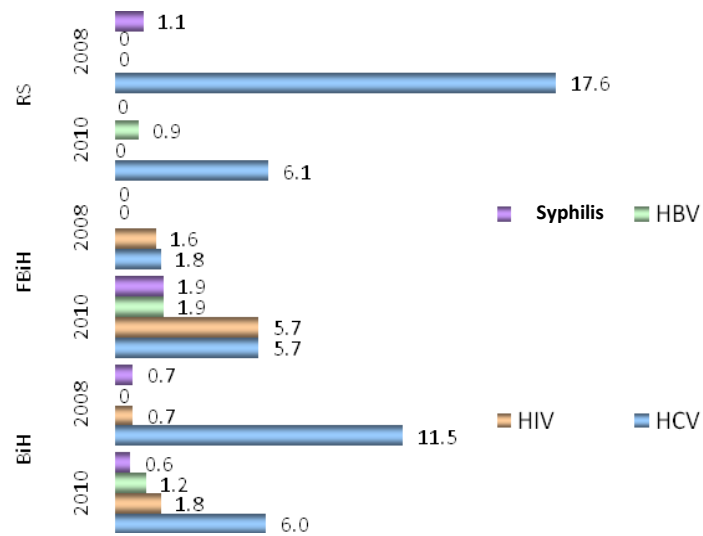


Testing

Of the total sample of 248 examinees, 168 of them got tested after they gave their informed consent (53 in FBiH and 115 in RS).

Test results are as follows: HIV - 1.8% (0.7% -2008), HCV – 6.0% (11.5% - 2008), HBV – 1.2% (0-2008), syphilis – 0.6% (0.7% -2008)

Graph 14: Results of testing to STI, comparative indicators 2008/2010



Rate of HIV infection/STI in the MSM population is low.

Increase in the rate of HIV and HBV positive persons, and decrease in the rate of syphilis and HVC infections was observed (possible explanation for this is the bigger share of injecting drug users in the previous research).

Results - MSM aged under 24

Socio-demographic data

Of 248 examinees, 103 (41.5%) are under 24, their average age is 22, majority of them is living in urban areas (90%, slightly less than in the 2008 research); 97% of them are nationals of BiH, mostly high school graduates (86.4%), and 41.7% of them are unemployed (which is considerably more than in 2008 – 14.1%).

Sexual behaviour

Average age when they had their first anal sex with a man is 17.6; 14.7% of examinees had their first anal sex with a man when they were under 16.

According to the obtained data, in 70% of cases, examinees report themselves as the inserting partner, with 3 different partners on average, that is, 69% as the receptive partner, with three different partners on average.

In the past 6 months, 88% of examinees had sex with a steady partner, which represents an increase in comparison to 2008 (79.3%).

In the past month, they had sex 8.27 times with their steady partner on average.

Condom use

When asked how often they used a condom with a steady partner in the past 6 months - only 20.7% of them used a condom each time (lower rate than on the total sample), while 15.9% of them never uses a condom.

A total of 61.4% of examinees reports anal sex with an accidental male partner in the past 6 months, which represents an increase in comparison to 2008 (58.7%). Average number of different accidental male partners which the examinees reported to have had anal sex with is 3.34, with an average of 3.66 intercoursues with an accidental partner in the previous month.

In the past six months, 58.2% of examinees used a condom each time with an accidental male partner, which represents an increase in comparison to 2008 (49.2%).

There is a slightly higher percentage of younger examinees (65%) who reported using a condom during their last anal sex with a man (total sample 63.7%). During the last oral sex with a male partner, 13% of examinees used a condom (this rate is higher than the total sample – 8.6%).

Knowledge and self-assessment of the risk of HIV

29.1% of examinees correctly answered all 7 questions about the HIV transmission.

Table 2. Knowledge of HIV/STI and self-assessment of risk, subsample of MSM under 24

Questions	BiH 2008	BiH 2010
<i>Risk of HIV infection can be significantly reduced by proper use of condom</i>	n=92	n=103
yes	98.9	99.0
no	1.1	-
does not know	-	1.0
<i>Person who appears to be healthy can be infected with HIV</i>	n=92	n=103
yes	84.8	88.3
no	3.3	4.9
does not know	12.0	6.8
<i>HIV infection is possible by sharing eating utensils with a person infected with HIV</i>	n=91	n=103
yes	11.0	10.7
no	64.8	67.0
does not know	24.2	22.3
<i>HIV infection is possible by using a previously used needle</i>	n=91	n=103
yes	100.0	96.1
no	-	1.9
does not know	-	1.9
<i>STI is possible through oral sex</i>	n=91	n=103
yes	72.5	79.6
no	9.9	7.8
does not know	17.6	12.6
<i>HIV infection is possible if a partner ejaculates in the mouth</i>	n=91	n=103
yes	71.4	73.8
no	13.2	5.8
does not know	15.4	20.4
<i>HIV infection is possible through mosquito bite</i>	n=103	
yes	14.6	
no	49.5	
does not know	35.9	

n = number of examinees who answered the question posed

In spite of multiple sexual partners, inconsistent use of condoms, when asked about self-assessment of risk of HIV infection, the largest part of examinees (54.9%) believes that the risk is small (less than in 2008), while 19.6% of them believe that there is no risk (the same result as in the 2008

research), while the percentage of those who assess the risk to be great (2.9%) is reduced in comparison to 2008 (6.5%).

Graph 15: Self-assessment of the risk of HIV

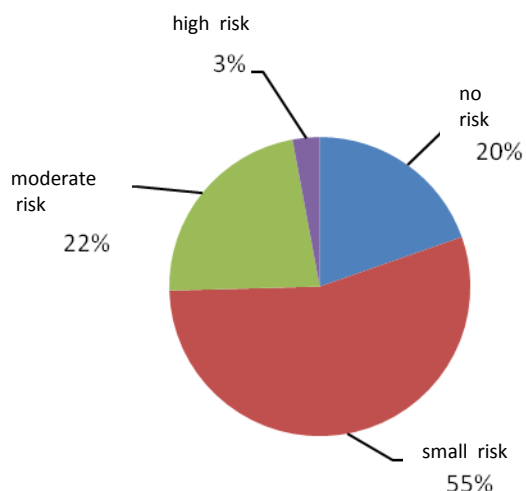


Table 3: Knowledge of partner's HIV status (current or previous)

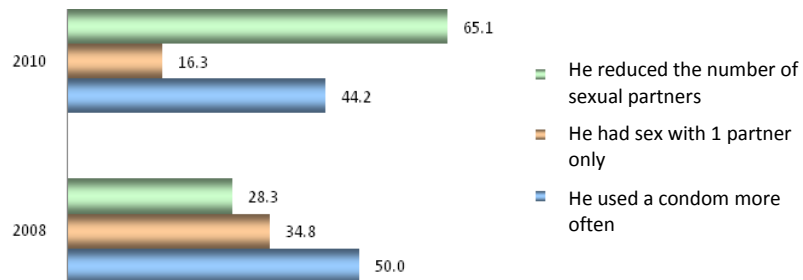
Answers:	n=92	n=103
He never tested for HIV	29.3	23.3
He is HIV positive	1.1	-
He is HIV negative	25.0	38.8
They never discussed the matter	44.6	37.9

n = number of examinees who answered the question posed

Although they are aware that a person who appears to be healthy may be infected with HIV, the largest number of examinees do not know the HIV status of their sexual partner because the partner never tested for HIV (23.3%), or they never discussed the matter (37.9%).

When asked about the changes they made in their sexual behaviour in the previous six months in order to reduce the risk of HIV infection, the largest number of examinees (65.1%) said that they had used a condom more often, that is, that they had reduced the number of sexual partners (44.2%).

Graph 16: Changes in sexual behaviour in the past 6 months, BiH



Unlike in the previous research, there was an increased percentage of examinees saying that they primarily reduced the number of sexual partners (65.1%), which is followed by more frequent use of condoms (44.2%).

Testing

In comparison with the 2008 study (19.6%), the percentage of those who tested for HIV in the past 12 months and who are aware of the test results is reduced (16.7%).

No HIV and HCV infections were registered among younger examinees:

Test results, 2010 : HBV (2.25%), syphilis (1.3%).

Debate - MSM population

This is the second integrated, bio-behavioural study that was conducted in order to collect comparative data on key types of behaviour and biological indicators of HIV/STI among the MSM population, which will, following the conduct of future studies, enable the monitoring of the HIV epidemic's temporal trend.

The total sample of MSM population comprises 248 examinees whose average age is 26.7, most of them (94.3%) are urban population (slightly less than in the 2008 research, 96.4%), 98.8% are BiH nationals, majority of them are high school graduates (72.2%), 39.1% of them are unemployed (considerably more than in 2008 – 22.4%), statistical significance $p < 0.001$.

10.6% of examinees had their first anal sex with a man when they were less than 16; average age at which they had their first anal sex with a man is 19.33 years.

74.2% of examinees were the inserting partner in the past six months, with an average of 3.21 different partners, that is, 63.3% were the receptive partner with an average of 2.80 different partners.

84.5% of examinees report having sex with a steady partner in the past 6 months, which represents an increase in comparison to 2008 (75.4%), with statistical significance being $p = 0.024$.

Average number of sexual intercourses with a steady partner in the past month is reported by the examinees to be 8.23.

Even though high percentage of examinees know that consistent and proper use of condoms may prevent HIV infection, (over 99% of examinees knows that the risk of HIV may be reduced by proper use of condoms), 89.9% of examinees knows that a person who appears to be healthy may be infected with HIV, majority of examinees is not familiar with the HIV status of their sexual partner because the partner never tested for HIV (23.3%), that is, they never discussed the matter (37.9%), results of the research show that the frequency of regular use of a condom with a steady partner in the past 6 months does not exceed 23%, while 16.9% of examinees never uses a condom.

Over 63% of examinees reports having anal sex with an accidental male partner in the past 6 months, which represents an increase in comparison to 2008 (57.4%). Average number of different accidental male partners in that period which the examinees reported having anal sex with is 3.97.

Examinees say that during the previous month, they had 3 sexual intercours with an accidental partner on average.

54.8% of examinees report using a condom each time with an accidental partner in the previous six months, which represents an increase in comparison with 2008 (49.2%), without the statistical significance ($p>0.05$).

63.7% of examinees reported using a condom during the last anal sex with a male partner, while only 8.6% of examinees used it during the last oral sex.

32.7% of examinees correctly answered all 7 questions about the transmission of HIV, and in comparison with the previous study, the rate of those who answered incorrectly or answered with “I don’t know”, is reduced.

Self-assessment of the risk of HIV indicates that 21.5% of examinees believes that there is no risk of HIV infection (16.5% in the 2008 research), percentage of those who estimate the risk to be great (5.7%) is reduced in comparison with 2008 (9.8%).

There is a reduction in the percentage of those who tested for HIV in the past 12 months and are aware of the test results (18.7%) in comparison with 2008 (22.8%).

This research established that there is relatively good general knowledge about HIV/STI, the need to use condoms, testing, but it was observed that in general, this knowledge is rarely transferred to the reported behaviour.

The research indicates significant proportion of examinees who practice unprotected anal sex and multiple non-commercial sexual partners. Sexual network of the MSM population is different, it is not limited to male partners only, it is concentrated on urban areas, which indicates potential link with HIV transmission to the general population.

All the prevention programmes must take into account the fact that the MSM population is highly stigmatised, hard to reach. It is therefore necessary, by using acceptable communication channels, to implement the targeting informative and educative activities, develop campaigns on use of condoms and lubricants, not only with respect to their availability, but also with respect to their consistent and proper use, with continued raising of awareness on the risks of HVI/STI in the MSM community.

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RESEARCH OF RISK BEHAVIOUR WITH REGARD TO
HIV/STI PREVALENCE IN GROUPS AT INCREASED RISK

S W

population

Results - SW population

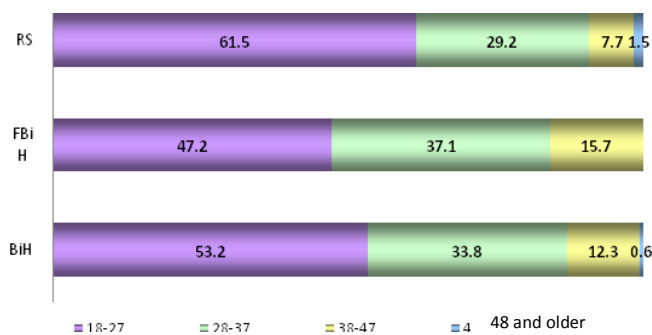
Socio-demographic characteristics

This research comprised 154 female examinees (89 in the Federation of BiH, 65 in Republika Srpska) in seven cities: Sarajevo (34), Travnik (30), Tuzla (15), Mostar (10), Banja Luka (39), Prijedor (13) and Bijeljina (13).

The examinees are mostly BiH nationals (94.2%), living in urban areas (90.2%), and 98.1% of them have been living in the current place of residence for over a year.

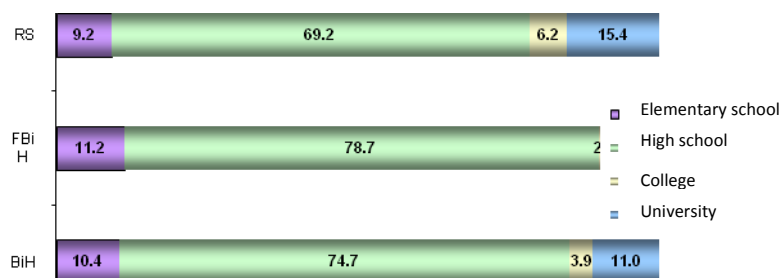
Average age of the examinees is 28 (their age ranges between 18 and 51), making them younger in comparison with the 2008 research ($P < 0.05$). More than 50% of the examinees (53.2%) are aged between 18 and 27, with this share being bigger in Republika Srpska (61.5%) than in the Federation of BiH (47.2%), Graph 17.

Graph 17. Examinees's structure by age groups



As for the educational structure, more than two thirds of the examinees graduated from high school (74.7%), and around 15% of them graduated from college or university, the percentage being higher in Republika Srpska (21.6%) than in the Federation of BiH (10.1%), Graph 18.

Graph 18. Examinees structure by level of education



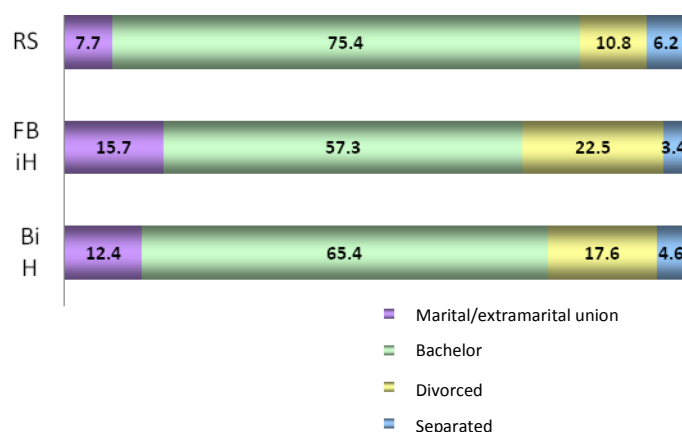
Majority of women participating in the study do not have permanent employment (83.1%), which is statistically significantly more than in the previous research (in 2008) (69.8%), ($p < 0.02$). There are slightly more employed examinees in Republika Srpska (10.8%) than in the Federation of BiH (7.9%), while 7.8% are still in school, Graph 19.

Graph 19. Examinees' structure by employment status



Analysis of the marital status shows that small percentage of the examinees lives in a marital union (12.4%), with the percentage being slightly higher in the Federation of BiH (15.7%) than in Republika Srpska (7.7%), while majority of them never got married (65.4%), Graph 20. There are no significant differences in the marital status in comparison with the 2008 research.

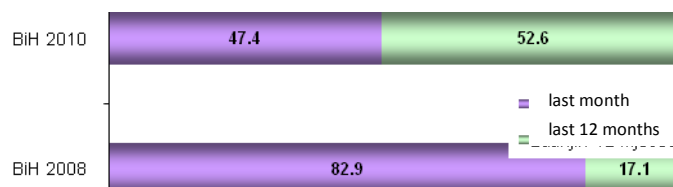
Graph 20. Examinees' marital status



Sexual behaviour

47.4% of examinees had paid sex in the past month, which is statistically significantly less in comparison with the 2008 study (82.9%), ($p < 0.001$), Graph 21. There is a significant difference between the entities (Federation of BiH 34.8%; Republika Srpska 64.6%).

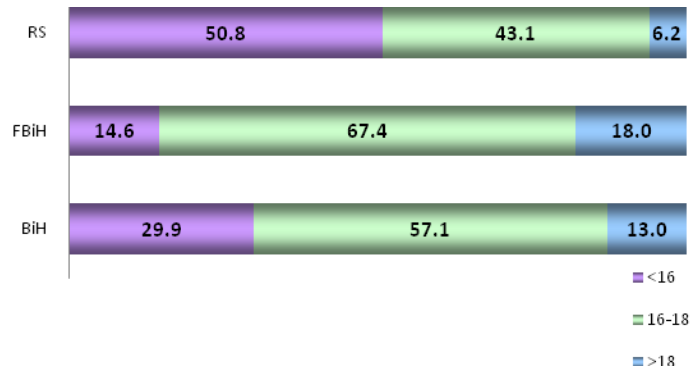
Graph 21. Paid sex



29.9% of examinees had sex for the first time when they were less than 16, which is statistically significantly more in comparison with the previous research (16.4%), ($p < 0.001$).

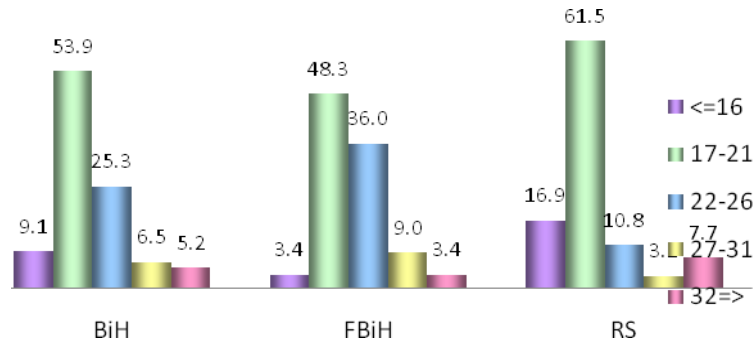
Mean value of the age at which the examinees had sex for the first time is 16.4 (standard deviation 1.87; range between 12 and 21), with a significant difference between the entities, Republika Srpska – 50.8%; Federation of BiH – 14.6%, Graph 22.

Graph 22. Age at which examinees had sex for the first time



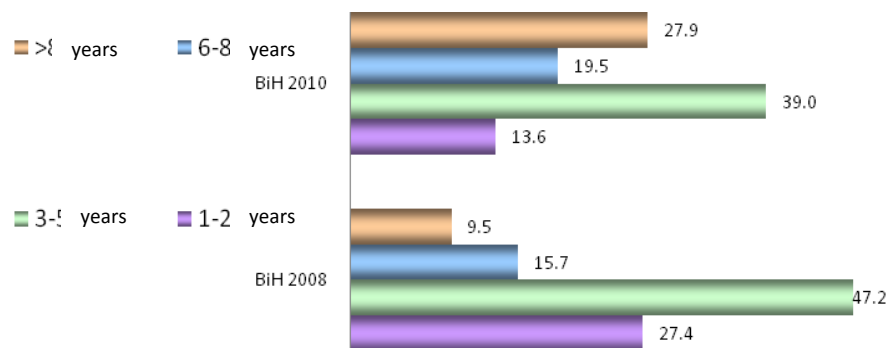
The largest number of examinees (63%) provided sexual service for money or some other compensation for the first time before they turned 21, which is significantly more in comparison with the previous research (43.4%). Mean value of that age is 21.3% (standard deviation 4.39; range between 14 and 35). In Republika Srpska, significantly larger number of examinees (78.4%) started providing sexual service at a younger age (before 21) than in the Federation of BiH (51.7%), Graph 23.

Graph 23. Age at which sexual service was for the first time provided for money or some other compensation



The largest number of examinees (39%) has been providing sexual services for 3 to 5 years, 27.9% of them have been providing them for more than 8 years, and there is a statistical significance in comparison with the previous study (9.5%), ($p < 0.001$) (see Graph 24.). There is no significant difference between the entities; mean value of the length of the period of providing sexual services is 6.7 years (standard deviation 4.39; range between 1 and 22).

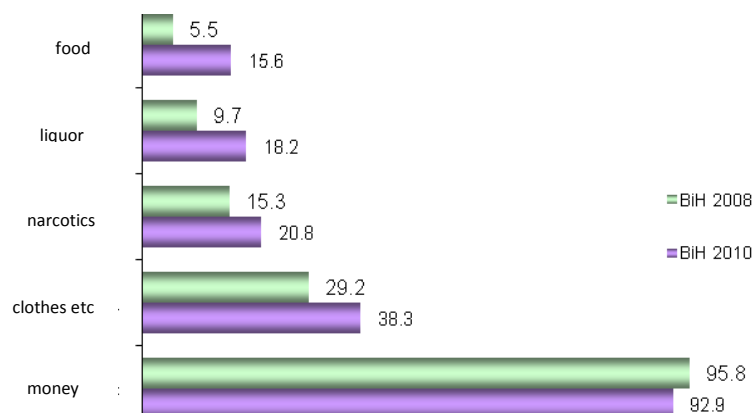
Graph 24. Length of the period of providing sexual services



Around one third (33.8%) of examinees support a family member, mostly between 1 and 3 persons, while 15% of them support 4 or more than 4.

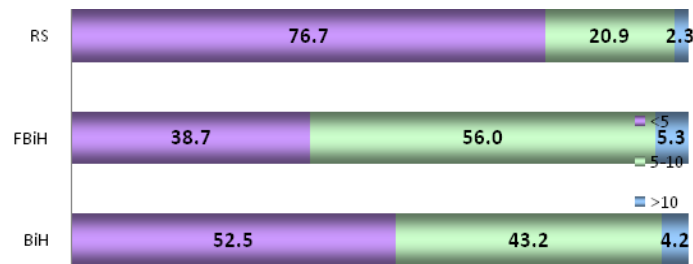
Majority of the examinees report providing sexual services for money (92.9%), followed by clothes, narcotics and liquor, and statistically significantly more provide them for food in comparison with the 2008 study ($p < 0.009$), (Graph 25).

Graph 25. Type of compensation for sexual services (2008, 2010)



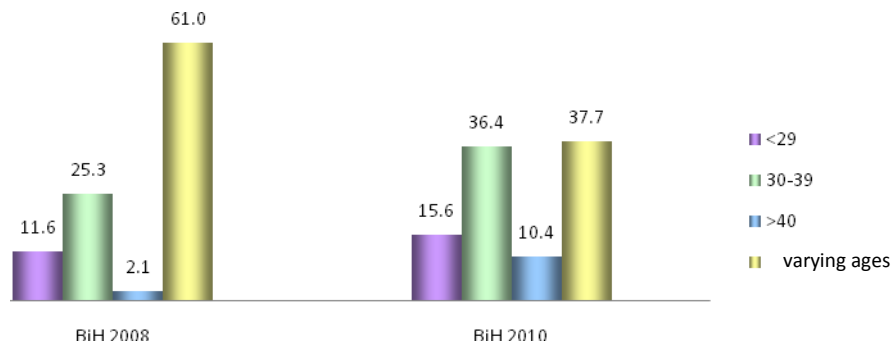
Average number of different sexual partners per week is 4.7, which is slightly less than in the 2008 research. There are more of them (76.7%) in Republika Srpska who have up to five partners in comparison with the Federation of BiH (38.7%), and in case of 5 to 7 partners, the situation is reversed, 20.9% in Republika Srpska, 56% in the Federation of BiH (Graph 26).

Graph 26. Number of different sexual partners in the past week



As buyers of sexual services, the examinees mostly reported only men (83.7%), while 15.7% reported both men and women, more in Republika Srpska (24.6%) than in the Federation of BiH (9%). When it comes to the age of the buyers of sexual services, the biggest percent (37.7%) stated that those were persons of varying age, followed by persons aged between 30 and 39 (36.4%). In the 2008 study, there were statistically significantly more (61%) buyers of varying age ($p < 0.001$), Graph 27. The biggest number (73.4%) of buyers of sexual services by place of residence are living in the same town as the examinees.

Graph 27. Age of buyers of sexual services (2008, 2010)



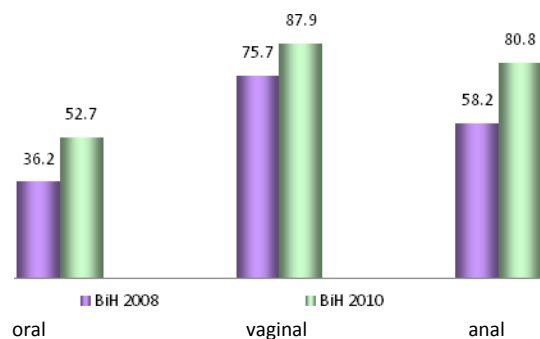
Oral and vaginal sexual services in the past month were provided by vast majority of participants in the research, while 43.5% of them provided anal sex.

The next set of questions referred to the application of knowledge to change in behaviour, which is the use of condom during the last sexual intercourse.

Use of a condom during the last sexual intercourse with a customer was reported by: 52.7% (oral), 87.9% (vaginal) and 80.8% (anal) participants, which is statistically significantly more in comparison with the

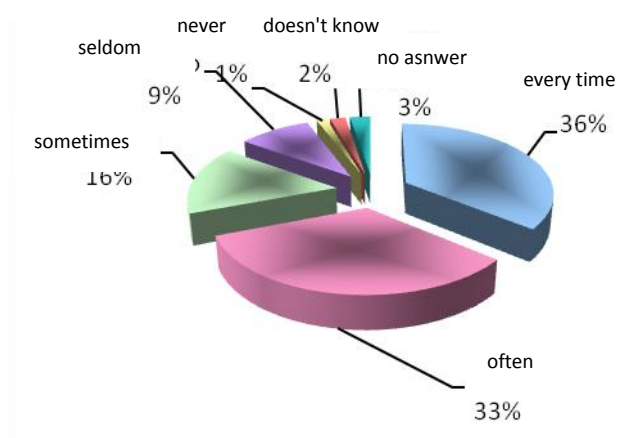
previous research conducted in 2008: 36.2% oral ($p<0.008$); 75.7% vaginal ($p<0.010$) and 58.2% anal ($p<0.006$), Graph 28.

Graph 28. Frequency of using condoms according to the type of sex (2008, 2010)



35.9% of examinees report using a condom each time during sex in the past month, 33.3% report using it often, and only 1.3% of examinees report not using it once (Graph 29). Higher frequency of use of condoms (each time) was reported by examinees from the Federation of BiH (46.6%) than from Republika Srpska (21.5%).

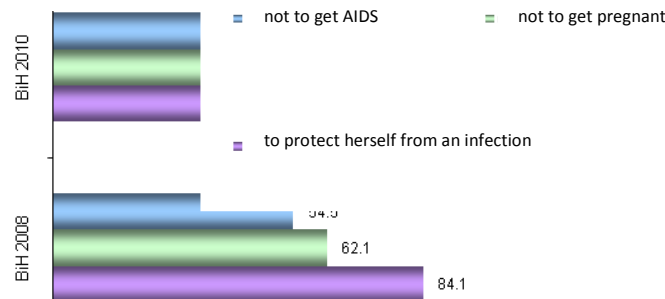
Graph 29. Frequency of using condoms in the past month



Major number of examinees reported using a condom during sex because they wanted it (59.6%), which is significantly less (75.3%) in comparison with the previous research ($p<0.005$).

Most of the examinees reported that the reason for using a condom was because they did not want to get AIDS (49.7%), and then to protect themselves from infection (43.7%), which is statistically significantly less (84.1%) in comparison with the 2008 study ($p<0.001$), Graph 30. 59.6% participants in the research buy condoms themselves.

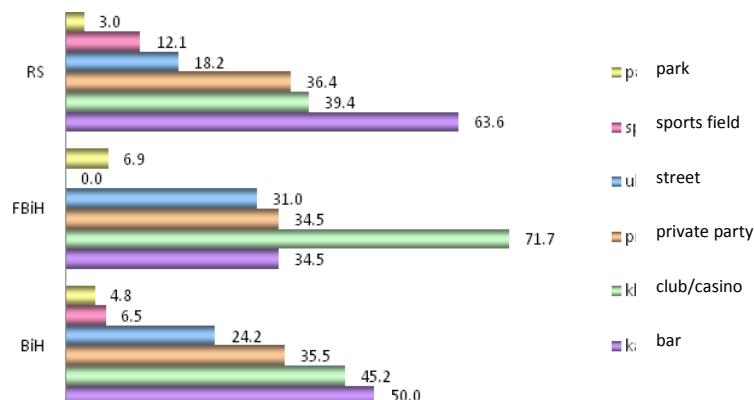
Graph 30. Reason for using a condom (2008, 2010)



The most common manner in which the examinees find customers is through arranged channels (43.8%), more in the Federation of BiH (53.4%) than in Republika Srpska (30.8), followed by finding them themselves (22.2%), more in Republika Srpska (30.8%) than in the Federation of BiH (15.9%).

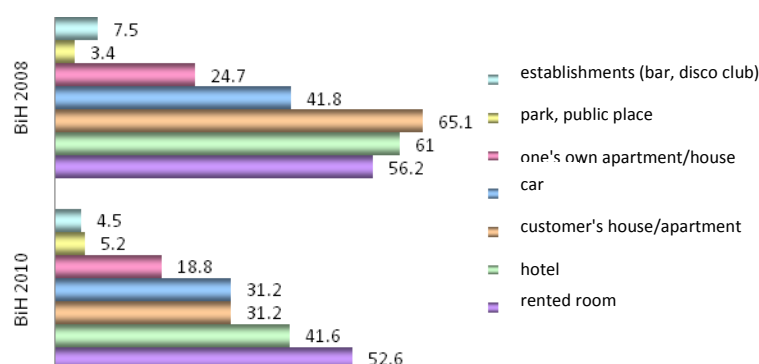
The most common locations for meeting customers are bars (50%), followed by clubs (45.2%), which is statistically significantly more than in the previous research (20.5%), ($p < 0.001$). There are also differences between the entities, in the Federation of BiH more often in clubs and in the streets, and in Republika Srpska more often in bars, Graph 31.

Graph 31. The most common locations for meeting/finding customers



The most common locations of providing sexual services are a rented room (52.6%), followed by a hotel (41.6%), which is statistically significantly less in comparison with the 2008 study results (61%) ($p < 0.001$), as well as the customer's house/apartment (31.2%), (65.1%) $p < 0.001$ and a car (31.2%), Graph 32.

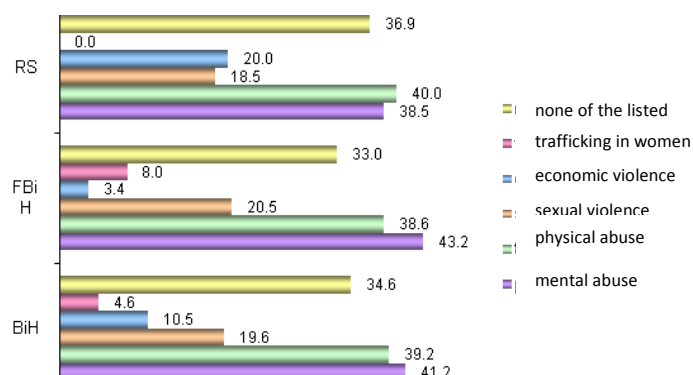
Graph 32. Locations of providing sexual services (2008, 2010)



The highest material gain (in BAM) in return for sexual services is for anal sex, mean value being 111.5 (standard deviation 50.9; the range is between 30 and 300), followed by vaginal sex, mean value being 94.6 (standard deviation 35.94; the range is between 40 and 200) and oral sex, mean value being 41.7 (standard deviation 17.9; the range is between 15 and 100). Material gain for oral and anal sex is higher in Republika Srpska than in the Federation of BiH.

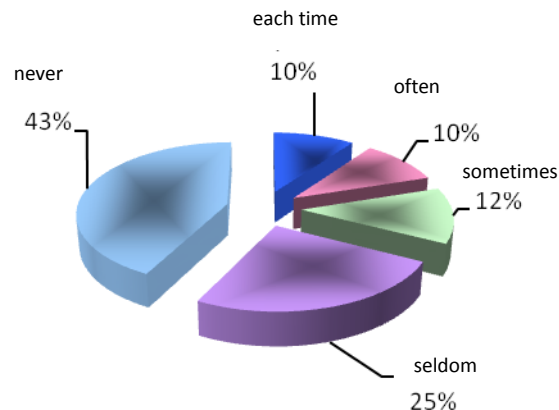
When asked if they ever suffered a certain type of violence, of the total number of examinees, around one third (36.9%) stated that they had not been subjected to the listed types of violence or abuse. The most common types of violence that the examinees reported are: mental abuse (41.2%), followed by physical violence (39.2%), and every fifth examinee (19.6%) was subjected to sexual violence. 10.5% of examinees were subjected to economic violence, more in Republika Srpska (20%) than in the Federation of BiH (3.4%), while 11.9% of examinees from the Federation of BiH stated that they had been the victims of trafficking in women (there was no Republika Srpska), Graph 33.

Graph 33. Frequency and types of abuse/violence



Only 10% of examinees reported using a condom with a steady sexual partner every time, 10% use it often, and as much as 42.5% of examinees never use it, Graph 34. Participants of the research from Republika Srpska report higher frequency of condom use.

Graph 34. Frequency of use of condoms with a steady partner

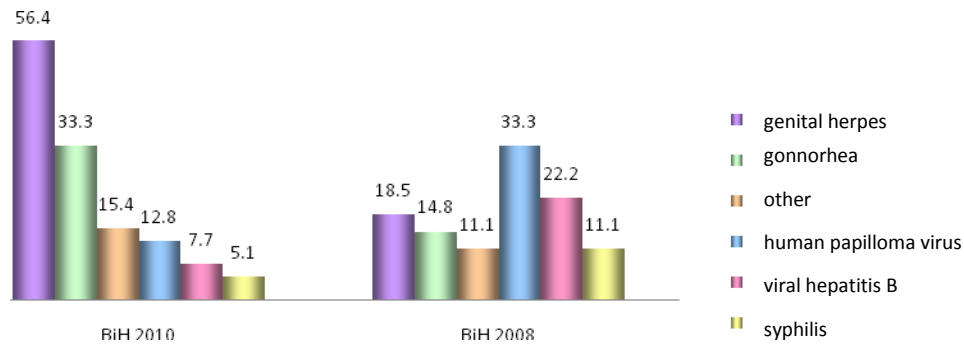


Almost all examinees (88.7%) had sex under the influence of alcohol, and around one half of them under the influence of narcotics (49.7%), which is statistically significantly more in comparison with the 2008 research (35.6%), ($p < 0.01$). Among those who used drugs, 26.6% injected it, while 42.9% exchanged the drug injecting kit with others.

5.2% of examinees served a prison sentence, and majority of them spent one year in prison.

When asked if they had a sexually transmissible infection, 26.6% of examinees answered positively. The most common self-registered sexually transmissible infections are genital herpes (56.4%), with statistical significance in comparison with the previous research, ($p < 0.005$), gonorrhoea (33.3%), human papilloma virus (12.8%), which is significantly less than in the 2008 research (33.3%), Graph 35.

Graph 35. Self-registered sexually transmissible infections (2008, 2010)

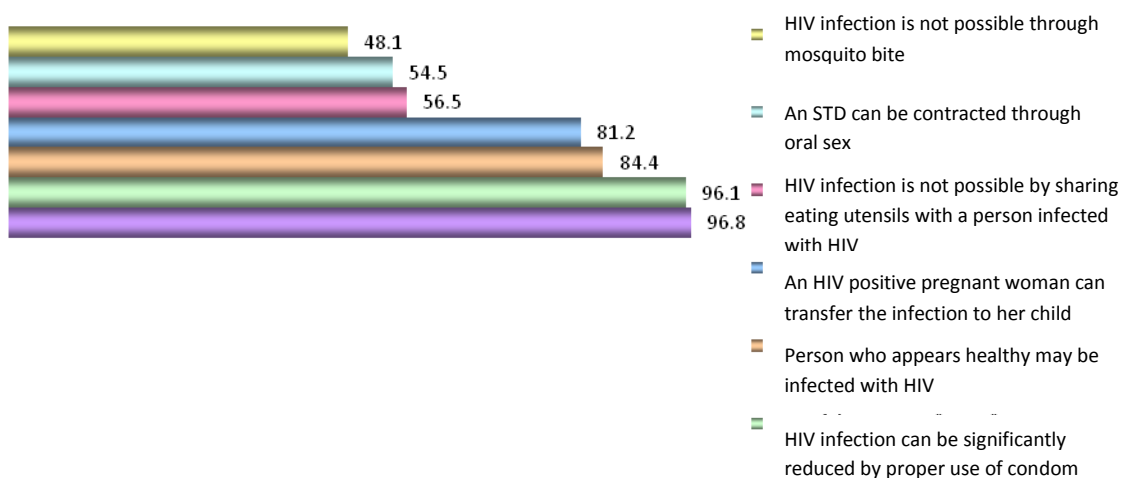


In case of suspicion in a sexually transmissible infection, 55.3% of examinees would talk to a general practitioner in a medical institution, while 31.9% of them would go to a private clinic.

Knowledge of HIV infection/STI and self-assessment of risk

Majority of examinees (over 80%) answered correctly all seven questions referring to the knowledge of HIV/STI, while three questions were answered correctly by around 50% of examinees, Graph 36.

Graph 36. Knowledge of HIV infection (percentage of correct answers)



Comparing the answers to questions asked in both researches, it was observed that the examinees demonstrated somewhat better knowledge in comparison to the 2008 research, however, in self-

assessment of risk, 42.2% believe that the risk is low, which is significantly more than in the previous research (28.8%), Table 1.

Table 4. Knowledge of HIV/STI and self-assessment of risk, total sample of SW (2008, 2010)

Questions	BiH 2008	BiH 2010
<i>HIV infection can be significantly reduced by proper use of condoms</i>	n=146	n=154
yes	92.5	96.1
no	1.4	1.9
does not know	6.2	1.9
<i>Person who appears healthy may be infected with HIV</i>	n=146	n=154
yes	70.5	84.4
no	8.2	5.2
does not know	21.2	10.4
<i>HIV infection is possible by sharing the eating utensils with an HIV positive</i>	n=144	n=154
yes	11.0	12.3
no	56.3	56.5
does not know	32.7	31.2
<i>HIV infection is possible by using an already used needle</i>		n=154
yes		96.8
no		0.6
does not know		2.6
<i>STI is possible through oral sex</i>		n=154
yes		54.5
no		14.9
does not know		30.5
<i>A pregnant woman infected with HIV can transfer the infection to her child</i>	n=146	n=154
yes	72.6	81.2
no	5.5	5.8
does not know	21.9	13.0
<i>HIV infection is possible through mosquito bite</i>		n=154
yes		11.0
no		48.1
does not know		40.9
<i>Self-assessed risk of HIV infection</i>	n=146	n=154
There is no risk	8.2	7.1
The risk is small	28.8	42.2
The risk is moderate	43.8	39.0
The risk is great	19.2	11.7

n = number of female examinees who answered the question posed

Testing for HIV and other sexually transmissible infections

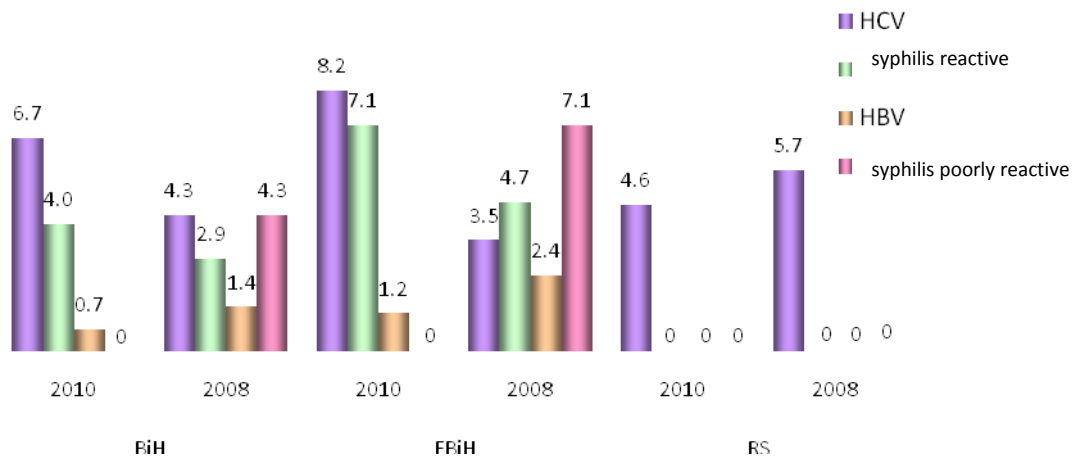
Results showed that the examinees used to test themselves statistically significantly more before (49.4%), in comparison with the 2008 study (28.8%), ($p < 0.001$).

13.6% examinees took the test in the past 12 months and are aware of the test results, and this result is almost identical with the results of the previous research (13.7%).

Of the total sample (154), 150 participants in the research gave an informed consent to blood sampling and testing for HIV/STI, 4 examinees from the Federation of BiH were the exception

Test results showed that there were no HIV positive participants in the research, while the comparative test results by entities and BiH (2010, 2008) are shown in Graph 37.

Graph 37. Results of testing for HIV



Results - SW population – age group between 18 and 24

The total number of the research female participants (154), included 31.8% participants of up to 24 years of age while in the 2008 research that percentage was somewhat lower, more precisely 27.4%.

Condom use

In comparison to the previous research, this research showed a higher frequency in use of condoms in intercourse on the sub-sample of the examinees younger than 24 who reported using condoms during sexual intercourse. During the last oral sex they had 50% of female examinees used a condom, while in the 2008 research that percentage was 42.1%. During the last vaginal intercourse they had 89.4% of female examinees used a condom, while in the 2008 research that percentage was 77.5%. During the last anal sex they had 84% of female examinees used a condom while there was 60.9% of them in the 2008 research.

34.7% of female examinees stated that they used a condom every time they had a sexual intercourse with a client in the last month, while 28.6% of them stated that they used a condom frequently.

Only 3/15 (20%) out of 15 female examinees who reported to have a steady partner state that they use a condom every time they have a sexual intercourse.

Risk behaviour

81.6% of female examinees had a sexual intercourse under the influence of alcohol while there were 97.2% of them in the 2008 research.

55.1% female examinees had a sexual intercourse under the influence of narcotics, 58,3% of them have had previous drugs experience while 18,5% are injecting drug users which shows an increase in comparison to the 2008 research where 41,4% had a sexual intercourse under the influence of narcotics, 40,5% have had previous drug experience and one female examinee (18%) was an injecting drug user.

Knowledge of HIV/STI and self-assessment of risk

One quarter (24,5%) of female examinees gave correct answers to all questions about HIV transmission while 16.4% of them gave 0 to 3 correct answers; cross results of this and 2008 research are provided in the table 2.

With regard to self-assessment of risk of HIV infection, 44.9% assess that the risk is low, which is a higher rate in comparison to the last research (32,5%). 14.3% of female examinees believe that the risk is high , while in the 2008 research there was 20% of them who thought the HIV risk high.

Table 5. Knowledge of HIV/STI and self-assessment of risk, subsample of SW under 24 (2008, 2010)

Questions	BiH 2008	BiH 2010
<i>HIV infection can be significantly reduced by proper use of condoms</i>	n=40	n=49
yes	92.5	95.9
no	2.5	0
does not know	5.0	4.1
<i>Person who appears healthy may be infected with HIV</i>	n=40	n=49
yes	72.5	79.6
no	7.5	8.2
does not know	20.0	12.2
<i>HIV infection is possible by sharing the eating utensils with an HIV positive person</i>	n=39	n=49
yes	7.7	12.2
no	56.4	53.1
does not know	35.9	34.7
<i>HIV infection is possible by using an already used needle</i>		n=49
yes		93.9
no		0
does not know		6.1
<i>STI is possible through oral sex</i>		n=49
yes		61.2
no		12.2
does not know		26.5
<i>A pregnant woman infected with HIV can transfer the infection to her child</i>	n=40	n=49
yes	72.5	87.8
no	10.0	4.1
does not know	17.5	8.2
<i>HIV infection is possible through mosquito bite</i>		n=49
yes		10.2
no		53.1
does not know		36.7
<i>Self-assessed risk of HIV infection</i>	n=40	n=49
There is no risk	10.0	4.1
The risk is small	32.5	44.9
The risk is moderate	37.5	36.7
The risk is great	20.0	14.3

n = number of female examinees who answered the question posed

HIV/SPI test

16 (32.7%) out of the total number (49) of young female examines tested for HIV/SPI some time ago and only 8.2% of female examines tested in the past twelve months and know the test result which is a lower rate than in 2008 (15%).

Just one out of 48 female examinees did not consent to testing, and the testing results are the following: HCV reactive - 2 (2,1%), HBV reactive - 2 (2,1%), syphilis reactive - 2 (2,1%).

Debate – SW population

Behavioural research amongst sexual workers (SW) is a repeated study that was conducted in BiH in 2008. The comparison of the results of the said studies shows behavioural and biological indicators for HIV and infections transmissible by sexual intercourse with the aim of monitoring the HIV epidemic.

The research was conducted in November/December 2010, and the sample covered 154 female examinees in seven towns. Around half of the number of female examinees is between 18 and 27 years of age, over 90% of them are BiH nationals. Somewhat more than two thirds of female examinees has secondary school qualifications (74,7%), and around 15% has college and university degree.

The total 83,1% of female examinees are not permanently employed which is statistically significantly higher rate than in the 2008 research (69,8%), ($p < 0,02$). The largest number of female examinees (62,6%) are single, 18,6% are divorced, 9% are married/in common-law relationship.

47.4% of female examinees had a paid sexual intercourse in the last month which is statistically significantly lower rate than in the 2008 research. (82,9%), ($p < 0,001$).

29.9 % of female examinees had their first sexual intercourse before 16 which is statistically significantly higher rate than in the 2008 research (16,4%), ($p < 0,001$). Examinees had around 5 different sexual partners per week on average.

Beneficiaries of sexual services are mainly domicile residents and persons of different age.

The research has shown that a large number of female examinees reduced risk behaviour in terms of a condom use during the last sexual intercourse they had, in comparison to the 2008 research. As for the reported use of condom during the last sexual intercourse they had with a client the percentage if the following: 52.7% (oral), 87.9% (vaginal) and 80,8% (anal), which is more than in the last research percentages: 36,2% (oral), 75,7% (vaginal) and 58,2% anal.

The most common manner in which the examinees find customers is through arranged channels (43.8%), and the most common locations for meeting customers are bars (50%), followed by clubs (45.2%), which

is statistically significantly more than in the previous research (20.5%), ($p < 0.001$). The most common locations of providing sexual services are a rented room and a hotel.

The most common types of violence that the examinees reported are: mental abuse (41.2%), followed by physical violence (39.2%), and every fifth examinee (19.6%) was subjected to sexual violence.

88.7% of the examinees had sex under the influence of alcohol, and 53.3% of them under the influence of narcotics which is statistically significantly more in comparison with the 2008 research (35.6%), ($p < 0.01$).

When asked if they had a sexually transmissible infection, 26.6% of examinees answered positively. The most common self-registered sexually transmissible infections are genital herpes (56.4%), gonorrhoea (33.3%), human papilloma virus (12.8%), which is significantly less than in the 2008 research (33.3%).

Majority of examinees (over 80%) answered correctly most of the questions related to their knowledge of HIV/STI, while other questions were answered correctly by around 50% of examinees. Comparison of the data shows that the examinees' knowledge is better to some degree than in the 2008 research but the self-assessment of risk showed that 42.2% of examinees believed that the risk was low which is significantly more than in the last research (28.8%).

Results showed that the number of examinees testing themselves for HIV/SPI increased (49.4%), in comparison with the 2008 study (28.8%), ($p < 0.001$) but 13.6% examinees took the test in the past 12 months and are aware of the test results, and this result is almost identical with the results of the previous research (13.7%).

In the total 150 female examinees, the reactive test was established for HCV - 7(6,7%), HVB - 1(0,7%) i syphilis - 6(4%).

Although sex workers are amongst the population that is hardly available, this research obtained significant information about their sex behaviour, level of knowledge, awareness and risk perception as well as biological parameters of HIV and other sexually transmissible infections.

In comparison with the last research conducted in 2008, some segments show certain improvement in knowledge, attitude and behaviour, with still existent significant level of vulnerability and risk.

Bearing in mind that this sub-population works as hidden and hardly available population, there are no relevant data on its number and size. Therefore, certain activities should be focused on a more precise

evaluation in order to plan and organise programmes and activities in terms of educational-promotional measures and intervention measures.

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