

## RISK BEHAVIOUR OF PRISON INMATES IN RELATION TO HIV/STI

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### SUMMARY

**Introduction:** Persons serving a prison sentence are identified as a population exposed to a higher risk of HIV/STIs due to a high incidence of risk behaviour, especially intravenous drug misuse. To show results of research on prevalence of HIV/STIs in relation to spread of risk behaviour and other risk factors.

**Subjects and methods:** Cross-sectional study on a sample of 620 respondents in 10 prisons. A specially structured questionnaire was applied as a research instrument, together with blood sample taking for laboratory analysis of HIV, HBV, HCV and syphilis.

**Results:** Majority of respondents show insufficient knowledge about HIV/AIDS, ways of transmission prevention, especially knowledge on ways of HIV transmission. Every sixth respondent has experience of intravenous drug use, of which 58% exchanged drug injection equipment. Every fifth respondent with a tattoo had their tattoo done in prison. Below 2% of respondents quote being victims of sexual abuse, and having wilful anal sexual intercourse in prison. Test results in this research: HIV (0), HBV (1.5%), HCV (14.3%) syphilis (0.5%).

**Conclusion:** Intravenous drug use presents the strongest risk factor for HCV, and therefore for HIV/STIs. Other risk factors – tattooing with kit exchange, sexual risk intercourse, abuse, insufficient knowledge and information about HIV/AIDS, ways of transmission and way of protection, and lack of access to measures of prevention and “Harm reduction” programme.

**Key words:** risk behaviour - HIV/STD – prison - B&H

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### INTRODUCTION

Bosnia and Herzegovina is a country with a low incidence of HIV epidemic, but general circumstances in the country (poor socio-economic conditions, insufficient education of population, a rise in use of narcotics, rise in crime, prostitution, human trafficking, migrations, stigma, discrimination etc.) all present a potential danger of spread of HIV in the coming period.

Prison inmate population shows a high incidence of risky behaviour, especially in terms of injected drugs misuse, and these sub-population groups are therefore more exposed to a higher risk of blood-borne infections (Laporte & Bolinni).

Prison inmates present one population group especially exposed to the risk of HIV and other blood-borne, or sexually transmitted infections due to a high level of risk behaviour in prisons, whose risk behaviour can contribute to further spread of infection – a „bridge“ towards general population (Gaughwin et al. 1991).

In majority of states, rates of HIV, hepatitis B and C infections among sentenced prisoners are significantly higher than those among general population due to risk behaviours before and during imprisonment (WHO/UNODC/UNAIDS 2007, Reindollar 1999). Although those serving a sentence may have been infected prior to coming to prison, undoubtedly there exists a risk for them to get infected in prison through unsafe sexual

activity (including sexual intercourse between persons of same sex), rape, unsafe tattooing, blood exchange rituals, exchange of injection equipment and other sharp instruments. Due to a high level of mobility between the prison and community, HIV/AIDS and other sexually transmitted diseases do not remain within the prison (Estebanez 1988).

Health services in prisons, where they exist, are mainly outside the health system, usually with insufficient capacity, characterised by lack of staff and other resources. Effective policies of HIV and STD prevention within prisons are often hampered by denial of existence of factors that aid their spread (access to drugs, sexual activities, lack of protection). Drug users and persons living with HIV in prison are often a stigmatised group exposed to social isolation, abuse and breach of human rights on behalf of both parties - inmates and prison staff (Health Canada - Public Health Agency of Canada 2004).

Experiences from a high number of countries show that it is possible to prevent transmission of HIV, HCV, HBV and other blood-borne diseases among prison inmates by creating specific prevention, education and information programmes in prison structures, based on similar studies (Hughes & Huby 2000).

To estimate current conditions in relation to HIV and other STDs in prisons in B&H, to enable us to develop and implement comprehensive, fact-based programmes of prevention and treatment of HIV/STDs .

### **Specific research aims:**

- To estimate HIV/STI prevalence among prison population;
- To determine the size of self-disclosed risk behaviour among persons serving a prison sentence prior and during the current prison time, and to identify risk factors that could be associated with transmission of HIV and other STIs;
- To estimate the level of knowledge, attitudes, behaviour and practices in relation to HIV/STIs among persons serving a prison sentence.

## **SUBJECTS AND METHODS**

### **Sample, time and location of survey**

This research was conducted as a cross-sectional study of a randomly selected sample of 620 persons serving a prison sentence in B&H, by surveying respondents with a standardised questionnaire and blood sampling for HIV, hepatitis B and C, syphilis laboratory testing. Research was conducted in the period between 15.08. and 26.08.2011. at 10 selected prison facilities in B&H. Research covers 620 respondents. Assessment team, in co-operation with prison service, prepared the research facility prior to research – list of persons serving a prison sentence, divided into smaller groups (to enable questionnaire deployment in groups).

### **Research instruments**

Survey was conducted via a standardised questionnaire deployed by specially educated NGO members who already implement HIV and STI prevention activities in prisons. Questionnaire paper was coded, with the same code accompanying the blood sample (5ml). Testing was completed using the new generation ELISA tests and results were handed over to the research team monitoring coordinator who delivered them to each respondent individually in a sealed, coded envelope, via their prison coordinator with an explanation of the findings and recommendation for possible further check-ups if needed.

### **Endorsment of the ethics committee**

Respecting the principles of the Helsinki declaration and its amendments, adherence to ethical practices within the research were ensured by obtaining an informed consent of respondents to participate in the research, and data protection of participants from the sample studied through no use of personal data. Endorsements obtained are a confirmation that that dignity and right to privacy protection of each respondent are respected, and that their data will be used only and solely for planning and administration of public health protection.

### **Statistical analysis**

After logical processing of completed questionnaires and data entry into a Microsoft Access 2000 database, SPSS software for Windows (version 15.00, SPSS INC, Chicago, Illinois, USA) was used for statistical analysis. Descriptive statistics method was used in data processing. Data was shown as a frequency and percentage for category variables, median and range for ordinal, and for continuous variables – depending on distribution of data – the mid value and standard deviation. For difference testing  $\chi^2$  test was used, with level of probability of  $p < 0.05$  being taken as statistically significant.

## **RESULTS**

A total of 620 respondents participated in the survey consisting of answering a questionnaire with 31 questions, and 595 of them accepted to give blood samples for HIV, HCV, HBV and syphilis testing (588).

### **Sociodemographic data**

Over 97% of respondents are citizens of B&H. Average age of a respondent is 34 years (standard deviation 10.639), in a range from 17 to 71 years of age. In the total sample there were 254 (40.9%) of respondents at the age of 30 or younger. Higher share (61.9%) are respondents with completed secondary school, while 2.6% have no school education. More than half of respondents (50.6%) were unemployed prior to coming to prison. Almost a half of respondents - 46.4% are in a marriage/or marriage union, whilst 39% of respondents are single.

By length of current sentence they are serving, largest share in the total study sample are respondents sentenced to 3 to 5 years of prison. For more than half of respondents (55.1%) this is their first prison sentence, while 24.1% of them have been imprisoned 2 and more times.

Over 55% of respondents started their prison sentence without receiving any education or information about HIV/AIDS prior to coming to prison. By their personal judgement, 41% of total number of respondents know little about HIV/AIDS-u. Respondents cite newspapers, printed media and TV and radio as most frequent sources they received information about HIV/AIDS from.

### **Knowledge, attitudes and behaviour related to HIV/AIDS**

Answers to questions about knowledge are grouped in three parts: general knowledge about HIV/AIDS, knowledge about ways of transmission and knowledge about HIV infection prevention.

**Knowledge about HIV/AIDS, ways of transmission and prevention**

Percentage of correct answers to certain questions about HIV/AIDS comes to between 45.5% to 73.3% (Table 1).

Lowest number of respondents (227) know that not all people living with HIV have AIDS (45.5%) (respondents from RS subsample show a somewhat better knowledge on all questions) (Table 2).

Percentage of correct answers to the question of ways of transmission of HIV infection ranges from 39.7% (those who know that HIV is not transmitted by a mosquito bite) to 84.1% (those who know that HIV can be contracted through an unprotected vaginal sexual intercourse with a person who is HIV infected). Smallest percentage of respondents (9.4%) are aware that HIV transmission cannot be prevented only by HIV counselling and testing (Table 3).

Almost 80% of respondents answered correctly that HIV transmission can be prevented by proper use of condom during every sexual intercourse. In this group of questions also, respondents from RS subsample answered a higher percentage of questions correctly.

**Knowledge, attitude and behaviour of respondents in relation to HIV/AIDS, per length of sentence served**

When it comes to level of knowledge, respondents differ significantly depending on the length of time spent serving a prison sentence in the last 10 years ( $F=4.143$ ;  $p=0.016$ ). Respondents who spent from 2 months to a year, had a significantly lower level of knowledge compared to those who spent three or more years in prison (Poshoc Scheffe test,  $p=0.021$ ) (Table 4).

There is no significant difference in knowledge, attitudes and behaviour in relation to HIV/AIDS depending on time spent in prison ( $p>0.05$ ).

**Table 1.** Structure of respondents with correct answer to claims about HIV/AIDS

Do you agree with the following?	B&H		FB&H		RS	
AIDS is caused by HIV	n=607	%	n=413	%	n=194	%
Yes	382	62.9	235	56.9	147	75.8
All people carrying HIV have AIDS	n=609	%	n=416	%	n=193	%
Yes	277	45.5	178	42.8	99	51.3
All homosexuals have HIV/AIDS	n=605	%	n=413	%	n=192	%
Yes	353	58.3	220	53.3	133	69.3
A person that looks healthy could be infected with HIV	n=610	%	n=414	%	n=196	%
Yes	447	73.3	291	70.3	156	79.6
Persons infected with HIV are more prone to different diseases	n=605	%	n=413	%	n=192	%
Yes	412	68.1	266	64.4	146	76.0

**Table 2.** Knowledge about ways of transmission of HIV infection

How can one contract an HIV infection?	B&H		FB&H		RS	
Vaginal sexual intercourse without a condom	n=618	%	n=421	%	n=197	%
Yes	520	84.1	342	81.2	178	90.4
Anal sex intercourse without condom	n=613	%	n=416	%	n=197	%
Yes	452	73.7	284	68.3	168	85.3
Oral sex	n=601	%	n=408	%	n=193	%
Yes	316	52.6	210	51.5	106	54.9
Mosquito bite	n=595	%	n=403	%	n=192	%
No	236	39.7	141	35.0	95	49.5
By sharing dining cutlery	n=598	%	n=408	%	n=190	%
No	264	44.1	163	40.0	101	53.2
By using a common toilet	n=595	%	n=408	%	n=187	%
No	276	46.4	176	43.1	100	53.5
By sharing drug injection equipment	n=612	%	n=417	%	n=195	%
Yes	503	82.2	332	79.6	171	87.7
Through handshaking with a person infected with HIV	n=601	%	n=408	%	n=193	%
No	376	62.6	239	58.6	137	71.0
From an infected mother to a child during pregnancy or childbirth	n=603	%	n=409	%	n=194	%
Yes	379	62.9	240	58.7	139	71.6
By sharing common equipment for tattooing/piercing	n=616	%	n=418	%	n=198	%
Yes	499	81.0	331	79.2	168	84.8
By using a shared shaving blade, toothbrush and similar	n=614	%	n=416	%	n=198	%
Yes	442	72.0	284	68.3	158	79.8

**Table 3.** Knowledge about ways of HIV transmission

In your opinion, HIV spread can be prevented by	B&H		FB&H		RS	
Abstinence from sexual intercourse	n=608	%	n=414	%	n=194	%
Yes	363	59.7	241	58.2	122	62.9
By being faithful to one, HIV negative partner	n=604	%	n=411	%	n=193	%
Yes	328	54.3	205	49.9	123	63.7
By correctly using the condom during every sexual intercourse	n=617	%	n=418	%	n=199	%
Yes	493	79.9	322	77.0	171	85.9
Through HIV counselling and testing	n=609	%	n=414	%	n=195	%
No	57	9.4	42	10.1	15	7.7
By using disposable tattooing equipment	n=611	%	n=415	%	n=196	%
Yes	420	68.7	271	65.3	149	76.0
By using disposable equipment for drugs injection	n=597	%	n=408	%	n=189	%
Yes	409	68.5	268	65.7	141	74.6

**Table 4.** Knowledge, attitude and behaviour in relation to HIV/AIDS per length of prison sentence

Variable	Theoretical score range	M±SD score by length of sentence			F	p
		2-12 months	1-3 years	> 3 years		
Knowledge	0-22	12.33±5.84*	13.62±5.62	13.94±4.92	4.143	0.016
Attitude	0-4	2.16±1.47	2.27±1.45	2.35±1.43	0.885	0.413
Behaviour	0-23	18.26±2.47	17.98±2.36	17.60±2.76	2.704	0.068

\* ANOVA

### **Respondents' attitudes in relation to persons living with HIV**

Percentage of negative answers to given questions represents a reflection of discriminatory attitude of respondents towards a person living with HIV (Table 5).

A little over a third of respondents would accept having a meal or sharing a cell with a person infected with HIV (these percentages are somewhat higher among respondents from the RS subsample). Out of 605 respondents that answered to this question, 90 (14.9%) gave a negative answer to all four response options. On the scale of attitude towards a person infected with HIV, inmates from semi-open prisons had a score of 2.40±1.43 in a range of 0 to 4 points, while respondents from closed-type prisons had a score of 2.14±1.46 points, resulting in a significantly more positive, more open attitude from respondents in semi-open prisons towards people living with HIV (Student t-test=2.145, p=0.032).

### **Risk behaviour prior to coming to prison**

#### **Sexual behaviour**

Out of 612 respondents, 82.4% of them quote having practiced sexual intercourse without a condom. Out of 442 respondents who reported a sexual intercourse with a random partner, 86.4% did not use a condom at the time.

#### **Drug use**

Out of 617 respondents who answered the question about taking drugs, 231 (37.4%) of them have used drugs prior to coming to prison. Out of the total number of respondents, 107 of them (17.4% of total sample) have used drugs by injection. Out of 107 respondents

who were intravenous drug users prior to coming to prison, 60 (57.9%) of them report having an experience of exchanging used injection equipment. Average age of first drug injection among respondents is 21 years of age, (standard deviation 5.423), range from 12 to 38 years.

### **Risk behaviour in prison**

#### **Sexual behaviour**

Out of 617 respondents, 1.6% of them quote being a victim of sexual abuse, 10% of physical abuse, and 19.4% of psychological abuse (n=614). Having a wilful sexual intercourse with an inmate was reported by 1.9% of respondents.

In the section estimating the sexual behaviour of persons serving a prison sentence, 61% of respondents believe that sexual intercourse is not practiced among inmates, 32% believe sex is practiced by a smaller, and 6% by a larger number of inmates, whilst 69.5% of respondents claim no-one uses a condom during anal sexual intercourse. Answering a question on accessibility to confidential HIV counselling and testing, 65.2% of respondents from the total sample answered positively to having access to both. Remaining four questions regarding specific forms of protection, were answered with 40.5% of respondents having access to condoms, and 22.6% to lubricants. Sterile needles and syringes were accessible only to 3.3% of respondents.

#### **Drug use**

Out of total number of respondents (620), 69 of them (11%) consumed drugs during their time in the current prison (FB&H 12.9%, RS 7.0%). Within the total number of intravenous drug users who are serving

**Table 5.** Respondents' answers about attitude towards HIV positive persons

If you knew someone who is infected with HIV, would you accept to	B&H		FB&H		RS	
Eat with them	n=611	%	n=416	%	n=195	%
Yes	242	39.6	156	37.5	86	44.1
Socialize with him/her	n=612	%	n=416	%	n=196	%
Yes	311	50.8	203	48.8	108	55.1
Share a prison cell with them	n=608	%	n=414	%	n=194	%
Yes	225	37.0	144	34.8	81	41.8
Offer them support	n=612	%	n=417	%	n=195	%
Yes	439	71.7	286	68.6	153	78.5

**Table 6.** HCV inf. and time spent in prison-includes only respondents who have not been imprisoned until now

How long have you been in prison already (n=328)	HCV test result				Total	
	Positive	%	Negative	%		
2 months to 1 year	15	53.6	113	37.7	128	39.0
1-3 years	8	28.6	93	31.0	101	30.8
More than 3 years	5	17.9	94	31.3	99	30.2
Total	28	100	300	100	328	100

a prison sentence (107), 9 of them (8.4%) of them continued taking drugs intravenously in prison, out of whom four use injection equipment used by someone else. Having a first drugs injection experience in prison is reported by 3.7% of respondents out of the total number of respondents who reported taking drugs intravenously - indicating that inmates starting a prison sentence arrive mostly with experience of intravenous drug use, presenting an additional risk of exposure to HIV/STIs in prison environment.

#### **Tattooing and prison**

Out of 618 respondents, over 50% of them have a tattoo (46.3% prior to coming to prison and 11.2% in prison), whilst 11.1% had a piercing prior to coming to prison, and 1.1% had it done in prison. Of total respondents, 57.5% have a tattoo, with 12.2% reporting having it done with equipment that was already used. 11% report having their tattoo done in prison, of whom 25% used previously used equipment. Respondents in closed-type prisons had tattoos more frequently, and done in prison, compared to respondents from semi-open type of prisons ( $\chi^2$  test=21.922; df=2; p<0.001).

#### **Testing for HIV/STIS**

Out of all respondents in the studied sample (617), 40.2% claim to have ever tested for HIV, and out of 616 respondents, 137 (22.2%) have tested in the last 12 months. Out of total number of respondents (617), 18.1% tested in the last 12 months and know their test results.

#### **Test results**

Of 616 respondents, 595 were – after an informed consent - tested for HIV, 588 were tested for hepatitis B and C viral infections and syphilis. No one taking the test was anti HIV positive, whilst HCV infection was

detected on 14.3% of the tested, HBV on 1.5%, and syphilis among 0.5% of tested individuals (Table 6).

In the sample of respondents serving their first prison sentence, among those with HCV infection, larger number were those who served their prison sentence for a shorter period of time (without a statistically significant difference in HCV infection presence dependent on length of time spent in prison ( $\chi^2$  test=3.250; df=2; P=0.197), an occurrence that could be explained by a fact that inmates arrive to serve a prison sentence already infected with HCV - experience of intravenous drug use).

## **DISCUSSION**

Prisons are places of an expectedly higher prevalence of blood-borne and sexually transmitted infections (BBSTDI) compared to the general community, for two main reasons: first, many persons serving a prison sentence are former or current intravenous drug users, and in that way may have a higher frequency HIV/STDI, especially HCV. Second reason being lack of, or insufficient preventive measures (clean needles and syringes, access to free condoms) in majority of prisons, combined with extreme social conditions (Chu & Peddle 2010, Elwood Martin et al. 2005). Frequency of HIV/STIs, injection drug use among prisoners, combined with drug injection and tattooing equipment sharing, abuse and other forms of risk behaviours make prison a high risk environment for transmission of those infections (Godinho 2005). As a result, this contributes to the epidemiological profile of those infections even in the out-of-prison environment, upon return from serving a prison sentence. Results of the study show lower level of knowledge about HIV/AIDS, ways of HIV transmission prevention, and

especially poor knowledge about ways of transmission. This is in line with their self-assessment of knowledge about HIV/AIDS, and also in-line with the fact that more than half of them arrived to prison without any prior education or information about HIV/AIDS. Fear of being differently treated due to possible HIV seropositivity represents a serious barrier to undertaking testing (Calzavara et al. 2005, Jürgens & Betteridge 2005). We have achieved a high response rate in this research (84%) something that can be associated to gradual strengthening of HIV prevention programme in prisons, and to a better, but still insufficient co-operation with health institutions and NGOs. According to data gathered, VCT services (Voluntary confidential counseling and testing (VCT), is accessible to 65% of respondents, condoms to 40.5%, sterile needles and syringes to 3.3% of respondents.

Behaviour of persons serving a prison sentence prior to entering a prison in large part determines their exposure to the risk of HIV and other blood-borne infections in prison environment (World Health Organization 1993). Drug injection in prison is a particularly important risk factor in relation to danger of HIV and other blood-borne diseases, especially if exchange of used equipment is present (UNODC & WHO 2009). A higher prevalence of HCV infection in prisons, when compared to general population, is registered mainly among intravenous drug users (IDUs) who form 17.4% of all respondents, therefore making intravenous drug injection the highest risk factor for HCV, usually maintaining high share of IDUs in prisons (UNODC & WHO 2009). Namely, IDU status is determined through self-registration, and respondents may not have the tendency to „admit“ a history of IDU in fear of possible consequences/additional sentence in prison. Despite these limitations, it can be concluded that blood-borne infections are present among persons serving a prison sentence, and that activities on prevention should be aimed at this prison sub-population. Frequent tattooing with exchanged equipment (over 50% of respondents have a tattoo, every eighth tattooed inmate has had their tattoo done in prison, and in 25% of cases sterile equipment was not used) warns us of a low awareness about the risk of tattooing in a prison environment (WHO/UNODC/UNAIDS 2007). Reliable data about the frequency of sexual activity in prisons is hard to gather in this type of research since sexual relations, apart from permitted marriage/out-of-marriage visits, are against prison rules, and are therefore reported less frequently to avoid inconvenience and in fear of being labelled as gay-considering majority of inmates practising same-sex sexual relations do not identify themselves as homosexuals (WHO/UNODC/UNAIDS 2007).

Testing can have a direct benefit for the inmates, but may also pose a risk of stigmatization. Research conducted in this way, although anonymous, still informed all respondents about their individual result, and those with a positive result could refer to the prison health service for further steps. In this way, prison can also offer a special surrounding for advancement in care of persons serving a prison sentence and prevention of HIV/STD bridge towards general population (UNODC 2008).

## CONCLUSIONS AND PROPOSAL OF MEASURES

Prison institutions, being a high risk environment for occurrence and spread of blood-borne and sexually transmitted infections require implementation of comprehensive preventive measures, continuous monitoring of scope of risk and protective behaviour of persons serving a prison sentence. At the same time, workability and value of comprehensive screenings for blood-borne and sexually transmitted infections in prisons should be evaluated – whether to be offered to all or only those with a history of IDU considering this research shows intravenous drug use, especially combined with equipment sharing, is the strongest risk factor for HCV and usually reflects a higher presence of IDUs in prisons (WHO/UNODC/UNAIDS 2007, WHO 2004).

*Information, education, communication (IEC)* – are an essential prerequisite for implementation of HIV/STD preventative measures in prisons. Persons serving a prison sentence should also be informed about those measures through structured educational programmes, acceptable communication channels, adjusted to the education level of prison (who, themselves, should take part in creation of such materials, with „peer educators“ possibly taking a key role) (Hughes 2003).

Voluntary confidential counseling and testing (VCT) is significant at least for two reasons – as a part of HIV preventive programmes and support to change in behaviour, i.e. early detection and admittance to treatment. Data from this research show that VCT services are partly accessible, occasionally and such should be available routinely or per request, but not as compulsory or as an instrument for segregation of seropositive individuals (WHO/UNODC/UNAIDS 2007).

It is therefore necessary to increase the accessibility to VCT services as part of the comprehensive HIV/STD programmes whose aim is to raise risk awareness, improve access to health care, treatment and support, reduction of stigma and discrimination and protection of confidential medical information whereby all forms of imposing must be avoided (Paul et al. 2002).

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