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Original scientific paper

Prevalence, Attitudes and Knowledge about HIV, HBV and HCV Infections among Inmates in Prisons Prilep and Bitola – a Pilot Study

Tanja Jovanovska[1], Biljana Kocic[2] and Viktorija P. Stojcevska[1]

[1] University St.Kliment Ohridski, Higher Medical College, Bitola, Rebublic of Macedonia
[2] University of Nis, Faculty of Medicine, Institute of Public Health Nis, Nis, Serbia

A B S T R A C T

Prisons are associates as facilities liable of high risk of infection disease, as a result of the possibility of transmission of infections in prisons surroundings. Investigations carried out in correctional facilities around the world have shown a high prevalence of blood borne hepatitis viruses and HIV. The study was aimed at confirming prevalence of HIV, hepatitis B and hepatitis C among prisoners in Bitola's, and Prilep's prisons, existing of co-infection as well to assess knowledge and attitudes related to HIV, HBV and HCV infections. In this cross-sectional study 200 prisoners have participated, providing answers to structured questionnaire and in order to analyze blood for HIV, HBV and HCV, rapid blood tests in detecting antibodies has been used. Prevalence of HCV is 0.20, HBV 0.17 and HIV prevalence is 0. Co-infection prevalence of HCV/HBV is 0.07 from the total number of examinees. As for the manner of infection with HIV virus 22% are familiar with the fact that persons cannot be infected by HIV if they have only one sexual partner who is not infected and have no other partners, and for the protection of HIV and Hepatitis B by correct use of condoms-58% have given correct answers.

***Key words**: prisoners, HCV, HBV, HIV, knowledge*

Introduction

Prisons are known for connection of high risk of infection diseases[1,2] as a result of possibility of transmission of infections in prisons surroundings[3,4]. Persons with inferior health status are main representatives among those who have contact with criminal juristic system[5].

Investigations carried out in correctional facilities around the world have shown a high prevalence of blood borne hepatitis viruses and HIV[6–8]. Among high-risk environments, prisons are well-known establishments for spreading of blood-borne viruses. Those who use illicit drugs or engage in sex work are often incarcerated. In addition, during imprisonment, prisoners often engage in unprotected sex, syringe/needle sharing, or sharing of other paraphernalia (spoon, water) because of the limited access to condoms and injecting equipment, etc.[9], tattooing and scarification are also common[10].

Low education level may act as one of the factors that cause lack of knowledge about HIV/AIDS in prison population. It may become one of shortcomings in preventing and solving the problem of HIV/AIDS. People need to know about what HIV/AIDS is, its symptoms, mode of HIV/AIDS transmission, risk factors, preventions, and what they must do if they have suspected symptoms of HIV/AIDS; therefore, people can participate to help the government programs of solving HIV/AIDS problems.

The prison establishments are rather convenient for spreading of diseases and therefore there is a solid opportunity for further studying and intervention of such diseases.[11] Because of that, a better knowledge of the prevalence rates of these infections in prisons would help better preventive measures undertaking of better planning[12,13] The main goal of the study was to assess the prevalence and risk factors of HIV, HBV, Hepatitis B and C, and HCV among incarcerated men in Prilep and Bitola, and as additional goal was to assess the knowledge and attitudes related to HIV, HBV and HCV infec-

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tion. The hypothesis introduced in the study: Prevalence of HIV, HBV and HCV infection in inmates population is higher than prevalence in general population, and there is a statistical significant difference that exists compared to prevalence of HIV, HBV, HCV infection depending of exposition to risk factors.

Material and Methods

A cross-sectional PILOT study about the prevalence and risk factors for occurring HIV, HBV and HCV infection was conducted among inmates. The research was performed in two correctional institutions in the Republic of Macedonia, in Bitola and Prilep for the period between September and December 2011. The study sample consisted of 200 examinees in total, 100 from Bitola's prison (with a capacity of 100 prisoners) and 100 from Prilep's prison (with a capacity of 100 prisoners).

Criteria for including in the research were: age (18 and above) with a minimum stay of 3 months in correctional facility. Criteria for excluding were age (less than 18), time at stay less than 3 months, illiteracy and mental ineligibility.

A core questionnaire was the instrument for the research, composed on the basis of similar researches. As medical diagnostic tool were used certain rapid tests for detection HIV, hepatitis B and hepatitis C infections as well. All participants signed an informed consent and provided a blood sample.

The questionnaire is composed of two segments. The first segment comprised data referring general demographic characteristics and socio-economic status (11 questions), second segment comprised of questions referring to habits, risk sexual behaviors and intravenous drug use and knowledge and attitudes related to HIV, HBV and HCV infection (20 questions).

As a medical diagnostic tool were used rapid detecting tests for HCV, HBV and HIV. Hexagon HCV is intended for rapid, qualitative detection of IgG antibodies to the hepatitis C virus in human serum plasma or whole blood. The onsite HIV1/2 Ab plus Combo rapid test is a lateral flow immunoassay for the simultaneous detection and differentiation of anti-HIV1 and anti-HIV2 antibodies in human serum plasma or whole blood. On site HBV5 Parameter rapid test is chromatographic test for qualitative detection of HbsAg, HbsAb, HbeAb, HbeAg and HbcAb in human serum or plasma.

The questionnaire was anonymous and the participation was voluntarily in accordance to previous written approval by the Ethical Committee and Executive Sanction Board of the Ministry of Justice in the Former Yugoslav Republic of Macedonia.

For statistical analysis and analysis of received data were used the following adequate statistic methods: Coefficient relation, proportion, rata of statistic series with attributive features. Dispersion measures (standard deviation, standard error) were used as for the analysis of data of numerical features. Statistic significant difference at series with attributive and numerical features was detected after testing of given hypothesis, using adequate statistic test- Pearson chi-square test. Odds ratio is also calculated and Confidence Interval for un-separate variables. Statistic significant is made for $p<0.05$. The study is performed by statistical program SPSS version 14.

TABLE 1
PREVALENCE OF HCV, HBV AND HIV IN PRISONS PRILEP AND BITOLA AND EXISTENCE OF CO INFECTION (HCV/HBV) N=200

Types of viral infection	N	%	Prevalence
HCV+	40	20%	0.20
HBV+	34	17%	0.17
HIV+	0	0%	0.00
HCV/HBV co-infection	14	7%	0.07

TABLE 2
ASSOCIATION BETWEEN RISKY BEHAVIOUR AND HCV+

Risky behaviour	χ^2	p	OR	95% CI
i.v. drug using	9.117	0.0278	2.9139	1.4311–5.9328
Place of taking out or in prison	10.375	0.0156	3.1235	1.5321–6.3652
Joint equipment	4.800	0.4408		
Tatooing	5.0511	0.0244		
Sterile needle for tatooing	4.205	0.7559		
Sexual contact (vaginal and anal)	3.898	0.0484		
Constant partner	0.838	0.8405		
Sexual contact	6.590	0.0862		
Sexual contact with same sex	0.016	0.9995		
Sexual contact with drug user	10.197	0.0698	0.1644	0.0417–0.6484
Condom with constat partner	10.871	0.4542		
Condom with non constat partner	8.0204	0.3886		

Results

Within the investigated group of 200 prisoners, 100 examinees (50.0%) from Prilep's prison and 100 (50.0%) from Bitola's prison, the testing was done with rapid detection tests of HCV, HBV and HIV and filling up the questionnaires as well. Average age of all prisoners is 29.69 years with SD±7.65 (min. 19, max. 54). From total number of 200 examines, 13 (6.5%) are without education, 40 (20%) with incomplete education, 65 (32.5%) with elementary education, 73 (36.5%) secondary education (3 or 4 years), 3 (1.5%) college and 6 (3%) high school. The highest percentage 91 (45.5%) of the inmates are condemned for heist, 39 (19.5%) for drug abuse, 20 (10%) for robbery, 9 (4.5%) for murder and the least number 5 (2.5%) are condemned for traffic threatening, and 36 (18%) regarding other criminal acts. As for the marital status, 64 (32%) married, 108 (54%) single, 28 (14%) illegitimate community 87% live in towns and 13% in villages.

Table 1 presents the prevalence of HCV, HBV and HIV among prisoners in both prisons in the Former Yugoslav Republic of Macedonia.

From 200 inmates 40 (20%) are HCV positive while 160 (80%) HCV negative, 34 (17%) are HBV positive while 166 (83%) are HBV negative. None of the 200 inmates is HIV positive. Total prevalence of HCV is 0.20, total prevalence of HBV is 0.17. Prevalence of co-infection of HCV/ HBV is 0.07 (7%) from 200 examinees.

Table 2 depicts connection between risky behavior and HCV positive status. The statistical significant connection among examinees is being registered between HCV positive status of incarcerated and intravenous drug use, place of taking drug – out or in prison, tattooing, sexual intercourse/vaginal and anal, sexual contact, sexual intercourse with intravenous drug user for $p< 0.05$.

TABLE 3
ASSOCIATION BETWEEN RISKY BEHAVIOUR AND HBV+

Risky behaviour	χ^2	p
i.v. drug using	0.128	0.9883
Place of taking out or in prison	1.507	0.6805
Joint equipment	2.891	0.7168
Tatooing	1.4403	0.5118
Sterile needle for tatooing	4.476	0.4831
Sexual contact (vaginal and anal)	0.2204	0.0359
Constant partner	0.506	0.9175
Sexual contact	0.8913	0.3457
Sexual contact with same sex	0.131	0.9879
Sexual contact with drug user	1.353	0.9294
Condom with constat partner	9.182	0.6051
Condom with non constat partner	0.362	1.0000

According to cross-sectional relation, intravenous drug using is a risk factor for infection with HCV–OR=2.9139 (95% Confidence Interval from1.4311 to 5.9328) place of taking drug is a risk factor for HCV infection – Odds Ratio=3.1235 (95% Confidence Interval from 1.5327 to 6.3652). Value for Odds Ratio is 0,1644 (95% Confidence Interval from 0.0417 to 0.6484) between correlation of sexual intercourse with intravenous drug and HCV status.

Table 3 presents connection between risky behavior and HBV positive. Statistical signification is registered between HBV status of prisoners and sexual intercourse/vaginal and anal ($\chi^2=0.2204$; df=1; p=0.0359).

Table 4 presents the statements of examinees related to attitudes and knowledge about HIV, HBV and HCV. As

TABLE 4
DISTRIBUTION OF EXAMINEES ACORDING TO THEIR ATTITUDES

Statement	Right Number (%)	Wrong Number (%)	I don't know Number (%)
Persons can be infected by HIV if they have only one sexual partner who is not infected and have no others.	43–22%	81–42%	70–36%
Persons can be protected by HIV and HBV infection with correct use of condom	113–58%	27–14%	54–28%
Person who seems healthy may be infected by HIV	112–58%	12–6%	70–36%
Pearson can be infected by HIV, hepatitis B and C if has meals together with someone who is infected	37–19%	57–29%	100–52%
Pearson can be infected by HIV if lives or works together with someone who is infected with HIV	52–27%	65–34%	77–40%
Prisoner who is positive to Hepatitis B or C should be isolated	38–20%	60–31%	96–49%
HIV, Hepatitis B and C trannsmited by using contaminated syringes and needle	47–24%	58–30%	89–46%
Testing to HIV, Hepatitis B and C is needed to all persons condemned to prison immediatly after entering	110–57%	18–9%	66–34%
Prisoner who is infected with HIV should not be allowed contact with other prisoners.	82–42%	35–18%	77–40%

TABLE 5
ASSOTIATION BETWEEN STATEMENTS AND HCV STATUS

	HCV+that have answered positively	HCV– that have answered positively	HCV+ that have answered negatively	HCV– that have answered negatively	χ^2	p
Persons can be infected by HIV if they have only one sexual partner who is not infected and have no others.	8	35	21	60	2.529	0.7721
Persons can be protected by HIV and HBV infection with correct use of condom	25	88	5	22	0.374	0.9960
Person who seems healthy may be infected by HIV	21	91	4	8	3.2338	0.6722
Pearson can be infected by HIV, hepatitis B and C if has meals together with someone who is infected	6	31	11	46	0.845	0.9741
Pearson can be infected by HIV if lives or works together with someone who is infected with HIV	8	44	18	47	3.139	0.6786
Prisoner who is positive to Hepatitis B or C should be isolated	6	32	17	43	3.223	0.6657
HIV, HepatitisB and C trannsmited by using contaminated syringes and needle	12	35	11	47	0.916	0.9691
Testing to HIV, Hepatitis B and C is needed to all persons condemned to prison immediatly after entering	24	86	5	13	1.292	0.9357
Prisoner who is infected with HIV should not be allowed contact with other prisoners	16	66	10	25	1.961	0.8901

for the manner of infection with HIV virus 22% are familiar with the fact that persons can't be infected by HIV if they have only one sexual partner (uninfected and without other partners), 42% gave wrong answer, and 36% are not familiar at all. For the protection of HIV and Hepatitis B by correct use of condoms–58% have given correct answers. 14% wrong, 28% are not familiar. 58% answered correctly that person may be HIV and Hepatitis B infected even though that person appears as healthy and only 29% give correct answer to the question „Person can be infected by HIV, hepatitis B and C if sharing meals together with someone who is infected. Only 42% have discriminatory attitude about people infected by HIV (»A prisoner infected with HIV should not be allowed to contact with other prisoners«), and around 40% have no attitude about this matter. 20% have prejudices about people who are positive to HCV and HBV (»A prisoner positive in Hepatitis B or C should be isolated«).

According to the statement »HIV, Hepatitis B and C trannsmited by using contaminated syringes and needle« correct answer was given in 24%, 30% have given wrong answer, a 46% were not familiar.

Connection between statements of examinees related to attitudes and knowledge about viral infections and HCV and HBV status is shown in table 5 and 6. As of the low values of Pearson Chi square and $p>0.05$, between statement HCV and HBV status of examinees does not exist statistical signification.

Discussion

This pilot research is conducted in two correctional facilitates in the Former Yugoslav Republic of Macedonia (Prison in Prilep and Bitola) indicates significant higher prevalence of HCV and HBV infections at prisoners referring to general population. In the Former Yugoslav Republic of Macedonia is that 1.5% of the general population are infected or around 30.000 are HCV positive cases. Up to recent knowledge, 5 to 7% of the population is infected with hepatitis B virus, and the last year 166 cases of HIV-AIDS are registered, only this year 20 new cases.

Data obtained by the research comprising 200 examinees being condemned to prison using rapid detection tests for HCV, HBV and HIV indicated relatively high prevalence of hepatitis B and hepatitis C. Prevalence of HCV is 0.20 (20.0%), HBV 0.17 (17.0%) and HIV prevalence is 0 (0%). Co-infection prevalence of HCV/HBV is 0.19 from positive examinees.

Researches that have been done in prison institutions in neighbor countries and the surrounding areas which indicated similar results. In Bulgaria national report referring to 2008 shows high percentage of HCV (13.5%) and HBV (11.8%) in prisoners – due to illegal using drugs and high certainty of tattooing[14]. A cross-sectional study was done in Hungary's prisons. The rata of HCV was significantly higher among intravenous drug users (22.5%)[15]. Prevalence of HCV in Croatia prisons is 12.5% and comparing to general population is significantly higher[16].

TABLE 6
ASSOTIATION BETWEEN STATEMENTS AND HCV STATUS

	HBV+that have answered positively	HBV– that have answered positively	HBV+ that have answered negatively	HBV– that have answered negatively -	χ^2	p
Persons can be infected by HIV if they have only one sexual partner who is not infected and have no others.	4	39	18	63	2.4731	0.6681
Persons can be protected by HIV and HBV infection with correct use of condom	15	98	7	20	3.558	0.6146
Person who seems healthy may be infected by HIV	16	96	4	8	3.193	0.6702
Pearson can be infected by HIV, hepatitis B and C if has meals together with someone who is infected	3	34	12	45	2.906	0.7145
Pearson can be infected by HIV if lives or works together with someone who is infected with HIV	5	47	15	50	3.659	0.5995
Prisoner who is positive to Hepatitis B or C should be isolated	5	33	12	48	0.756	0.9797
HIV, HepatitisB and C trannsmited by using contaminated syringes and needle	8	39	8	50	1.013	0.9615
Testing to HIV, Hepatitis B and C is needed to all persons condemned to prison immediatly after entering	20	90	4	14	0.569	0.9894
Prisoner who is infected with HIV should not be allowed contact with other prisoners	17	65	5	35	1.046	0.9596

Accessible global data indicate high prevalence and transmission of infectious diseases such as TBC, HIV, syphilis, Hepatitis B virus (HBV), Hepatitis C virus (HCV) in prisons [17,18] Prevalence of HIV, HBV and HCV-a, is registries among 357 randomly chosen prisoners in male prisons in Karachi-Pakistan and is 2.0%, 5.9% i 15.2% [19].

At examinees in prisons in the Former Yugoslav Republic of Macedonia statistically significant association is registered between risky behaviors and positive status and intravenous drug use, intercourse with intravenous drug user for $p<0.05$. Studies show that also in Estonian prisons the existing risky factors are; injecting of drugs, using join equipment and unprotected sexual contacts. Almost one third of interviewed prisoners have reported drug injecting in prison, two thirds reported using of joint equipment and less than 10% drug users started with it in prison[20].

As for the existence of HIV virus, HBV and HCV high percentage of prison population in Macedonian prisons (94%) is well-informed. Similar results about attitudes and knowledge for HIV and other sexually transmitted diseases obtained also in study in Republic of Serbia[21], and in Croatia where study was conducted for risk behavior in getting HIV at MSM. Almost all (99.3%) of the respondents are familiar about HIV/AIDS[22].

Recent study investigated knowledge, attitudes and habits for prevention of HIV among samples of Iranian incarcerated[23]. Prisoners in Mazandran province have shown average level of knowledge on HIV. But there were wrong understandings as well (34.8% out of 1760 prisoners) assumed that HIV/AIDS is not an infectious disease.

Numerous countries in the world nowadays show significant percentage of drug addicts people entering the prison and the majority of them continue injecting drugs after entering[24].

Comparing to general not incarcerated population, prisoners worldwide continue showing significantly higher prevalence of HIV, HBV and HCV infections[25]. Identification of risk factors and risk behavior in prisoners and determination of stigmatization and discrimination level indicates undertaking preventive measures in due time[26].

Study conducted in Serbia showed that sexual workers had a very poor knowledge of HIV transmission[27].

Conclusion

As of the confirmed knowledge of prisons conditions and conducted study of the prevalence of HCV, HBV and HIV infections suggest the necessity of well organized health service-especially, immunization programs, infectious disease screening, treatment, and promotion of living conditions in prisons.

Ethical approval

The research was conducted by anonymous questionnaires in accordance to the approval of each interviewed

person and the Ethics Committee of the Medical Faculty at the University of Skopje, approval by the Ministry of Justice, particularly by the Directory of execution of sanctions – governing with prisons.

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T. Jovanovska

University St.Kliment Ohridski, Higher Medical College, Blvd. 1 Maj, bb, 1000 Bitola, Republic of Macedonia
e-mail: tanjajovanovska42@yahoo.com

PREVALENCIJA, STAVOVI I ZNANJA O HIV, HBV I HCV INFEKCIJA MEĐU ZATVORENICIMA U ZATVORIMA PRILEPU I BITOLI – PILOT STUDIJA

SAŽETAK

Zatvori se poistovjećuju sa postrojenjima podložnim visokom stopom rizika infekcija, kao rezultat mogućnosti prijenosa infencija u zatvorskom okruženju. Istraživanja provedena u popravnim ustanovama diljem svijeta pokazala su visoku učestalost virusa hepatitisa i HIV-a putem krvi. Istraživanje je usmjereno prema potvrđivanju prevalencije HIV-a, hepatitisa B i hepatitisa C među zatvorenicima zatvora u Bitoli i Prilepu i postojanju koinfekcije, kao i prema procjeni znanja i stavova vezanih uz HIV, HBV i HCV infekcije. U ovoj cross-sectional studiji sudjelovalo je 200 zatvorenika, pružajući odgovore na strukturirane upitnike, dok su za analizu krvi korišteni brzi krvni testovi u detekciji antitijela. Prevalencija HCV iznosi 0,20, HBV-a 0,17 i HIV-a 0. Koinfekcijska prevalencija HCV/HBV-a iznosi 0,07 od ukupnog broja ispitanika. 22% ispitanika je upoznato sa činjenicom kako ne mogu biti zaraženi HIV-om ako imaju samo jednog seksualnog partnera koji nije zaražen, dok je njih 58% dalo točne odgovore za zaštitu od HIV-a i hepatitisa B ispravnim korištenjem kondoma.