



RESEARCH ON HIV STIGMA AND DISCRIMINATION AMONG HEALTH CARE WORKERS IN PUBLIC AND PRIVATE HEALTH CARE SECTOR IN BIH



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**Public Health Institution Public Health Institute of Republic of Srpska
Institute for Public Health of Federation of Bosnia and Hercegovina**

Research on HIV stigma and discrimination among health care workers in public and private health care sector in BIH

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CONTENT

1. INTRODUCTION.....	1
1.1. HIV/AIDS in Bosnia and Herzegovina – epidemiological situation	1
1.2. Professional risk – health workers.....	1
1.3. Health workers, HIV related stigma and discrimination.....	1
2. STUDY AIMS	3
2.1. General aim of the study	3
2.2. Specific aims of the study	3
2.3. Set of selected indicators:	3
3. STUDY METHOD.....	5
3.1. Study sample	5
3.2. Study instrument	5
4. ORGANIZING AND CONDUCTING THE STUDY	7
4.1. Time and method of the study	7
4.2. Field work	7
4.3. Monitoring and evaluation	7
5. STATISTICAL DATA PROCESSING	9
5.1. Description.....	9
5.2. Assessment of population proportions	9
5.3. Assessment of differences.....	9
5.4. Connection analysis	9
5.5. Statistical significance.....	9
5.6. Used statistical programme packages	9
6. STUDY RESULTS.....	11
6.1. Socio-demographic characteristics of the interviewees.....	11
6.1.1. HIV/AIDS education	14
6.1.2. Health workers' knowledge about the basic measures for preventing HIV infection in the workplace	15

6.1.3.	Exposure and behaviour of health workers in the context of HIV infection prevention	17
6.1.4.	Health workers' knowledge about the ways HIV infection is transmitted	19
6.1.5.	Health workers' general knowledge about HIV/AIDS	22
6.2.	Health workers' attitudes towards people living with HIV	23
6.2.1.	Irrational fear of people living with HIV	23
6.2.2.	Willingness to provide health services to people living with HIV	24
6.2.3.	Perception of high exposure at work	26
6.2.4.	Condemnation and blame aimed at people living with HIV	27
6.2.5.	Discrimination of people living with HIV	30
7.	DISCUSSION ABOUT THE STUDY RESULTS	33
7.1.	Health workers' knowledge about HIV/AIDS	33
7.2.	Health workers' behaviour in the workplace in the context of HIV prevention	33
7.3.	Attitudes of health workers towards people living with HIV	34
8.	CONCLUSION	37
9.	PROPOSED MEASURES	39
	APPENDICES	41
	LITERATURE	51

1. INTRODUCTION

1.1. HIV/AIDS in Bosnia and Herzegovina – epidemiological situation

Bosnia and Herzegovina falls into the group of countries with the low HIV prevalence, lower than 1% among general population and lower than 5% among the population at risk. Till the end of 2010, 170 people infected with HIV were registered in Bosnia and Herzegovina, whereas AIDS developed in 109 people. Despite the existence of the programme for HIV prevention on the state level and the support of the Global Fund against AIDS, Tuberculosis and Malaria (GFATM), the number of HIV-tested people is extremely low, so it is likely that there are a considerably larger number of people living with HIV (PLHIV), than presented in the official data.

The most common way of transmitting HIV in the period from 1986, when the first case of HIV in Bosnia and Herzegovina was recorded, up to now, is heterosexual. The heterosexual way of transmitting HIV is followed by homo/bisexual ways and the transmission among injection drug users, while for a certain number of infected people, the way of transmission can't be identified.

In Bosnia and Herzegovina there are 19 centers for voluntary and confidential counselling and testing, but the number of tested people is extremely low. In 2010 slightly more than 8000 people were tested in voluntary and confidential counselling and testing centers.

Poor socioeconomic state, insufficiently educated population, lack of a reliable evaluation of the size of the populations exposed to higher risks, migration of mobile populations, inadequate HIV and AIDS control system and the presence of HIV and AIDS-related stigma and discrimination, are of the utmost importance for HIV infection spread in Bosnia and Herzegovina.

1.2. Professional risk – health workers

With HIV outbreak all over the world, there is growing concern among health workers about the possibility of being infected while performing professional activities. One of the main causes of concern is the insufficient knowledge about the way HIV is transmitted and about preventative measures. According to unofficial information obtained from the interviews conducted with the staff from clinics for infectious diseases, where PLHIV patients are treated, and civil society organizations which deal with HIV prevention, PLHIV patients' discrimination is often evident in the way that their medical records are marked or the patients are isolated during their treatment. Some cases where medical intervention was denied were also recorded.

1.3. Health workers, HIV related stigma and discrimination

Stigma is a social phenomenon of the marginalization of an individual or a population group which causes denying people living with AIDS full rights in the social environment. It is a dynamic process of underestimating a person, resulting in significant discrediting of an individual in the eyes of other people. When stigma occurs, the result is discrimination, either in the form of a particular activity or negligence.

There are several levels on which HIV and AIDS-related discrimination can be manifested – on general social level, local community level, in the workplace, during professional engagement, on the health care level, in the family and among friends.

In order to cope with the problem of stigma and discrimination, it is necessary to examine all the causes and, based on the results obtained, create quality prevention programmes. Very often, due

to the lack of data about the causes of stigma and discrimination, prevention programmes are not adequately adapted to available capacities, which lead to solving problems partially.

The question of stigma and discrimination against risk populations, poses one of the greatest challenges nowadays. Stigma is present in the society, especially in the certain segments of health institutions of all levels. The results of the numerous worldwide research studies into health workers' stigma and discrimination against PLHIV show that the most common cause of this problem lies in the health workers who are inadequately informed and whose level of knowledge about HIV infection is insufficient. Also, stigma related to HIV originates from the negative attitude towards PLHIV and intensifies it by connecting HIV and AIDS with already marginal behaviour, such as providing sexual services, drug abuse, homosexual and transgender sexual behaviour. It is often thought that people with AIDS deserve the blame and HIV positive status.

Stigma is also present in the language. Since the outbreak of the epidemic there are strong metaphors associating it with death, guilt and punishment, crime and horror, which leads to increased stigmatization.

Discrimination, as defined by the UNAIDS Protocol for identifying discrimination of people living with HIV, refers to any form of discrimination, ostracism or restricting a person confirmed to have or suspected of having HIV positive status, no matter whether that kind of behaviour is justified or not.

HIV/AIDS -related stigma in the health sector has serious consequences on the epidemic process. Fear of stigma and discrimination leads to the distrust of health workers and health care system in general, avoiding testing, revealing one's HIV status and applying highly active antiretroviral therapy. The presence of PLHIV stigma and discrimination in health sector leads to the compromising of the overall effort of the community in HIV epidemic prevention.

2. STUDY AIMS

2.1. General aim of the study

General aim of the study is to examine the existence of HIV/AIDS-related stigma and discrimination among health workers in public and private health sector, and to evaluate the knowledge, attitudes and behaviour of health workers towards people living with HIV.

2.2. Specific aims of the study

1. Examine knowledge, attitudes and behaviour of health care professionals related to HIV and AIDS
2. Examine the existing level of HIV prevention in the workplace
3. Examine medical workers' educational needs related to HIV

2.3. Set of selected indicators:

1. Percentage of health workers who received any kind of HIV/AIDS education
2. Percentage of health workers who are familiar with the basic HIV infection prevention measures at workplace
3. Percentage of health workers who apply basic infection prevention measures during the interventions, where contact with the patient's blood or his/her body fluids is possible.
4. Percentage of health workers who gave correct answers to all the questions referring to the ways HIV infection is transmitted
5. Percentage of health workers who are afraid to give an injection to a person living with HIV (fear of contracting HIV)
6. Percentage of health workers who condemned people living with HIV in any way
7. Percentage of health workers who blamed people living with HIV in any way
8. Percentage of health workers who made people living with HIV feels ashamed in any way
9. Percentage of health workers who saw or heard of discriminating behaviour against people living with HIV in a health institution
10. Percentage of health workers who don't think the patient's HIV positive status should be kept secret



3. STUDY METHOD

3.1. Study sample

The study was carried out on Bosnia and Herzegovina territory, parallel with the entities - Republic of Srpska and BiH Federation, as well as in Brčko District. It included a representative sample of health workers. The sample was formed based on the data about the number of employees in public and private health institutions, which is available in the Public Health Institute of Republic of Srpska and Ministry of Health and Social Welfare of Republic of Srpska. In BiH Federation the data was available in the Public Health Institute of BiH Federation and vocational associations of BiH Federation, while the data for Brčko District was obtained from Brčko District Health Department. In this study, the sample was a stratified two-stage cluster, ie. stratified one-stage common random sample of health workers from public and private sector in Bosnia and Herzegovina, with choice plausibility proportional to the size of the health institutions and the number of health workers employed in them (categories: medical doctors, dentists, nurses/medical technicians, laboratory nurses/technicians and dental nurses/technicians). The strata were made of two entities (Republic of Srpska, BiH Federation) and Brčko District, as well as all three levels of health care (primary, secondary, tertiary) and blood transfusion centers.

The sample was chosen to provide a statistically reliable evaluation of the indicators which indicate stigma and discrimination of people living with HIV, both on the level of Bosnia and Herzegovina and entity levels - Republic of Srpska, BiH Federation and Brčko District, as well as on the above-mentioned organizational levels of health care.

All health institutions which were included in the sample, voluntarily accepted to take part in the study.

The list of the institutions included in the sample can be found in the Appendix 1.

3.2. Study instrument

A questionnaire, especially made for this study and based on the similar studies in the region and the world, was used as a study instrument. The questionnaire was adapted to the situation and needs in BiH. The questionnaire contains questions from the following areas: health workers' education, preventative measures in the workplace, knowledge, attitudes and the practice related to HIV, with the emphasis on stigma and discrimination, as well as some general socio-demographic characteristics of the interviewees.

In the questionnaire, special attention was paid to the questions related to the attitude of health workers towards people living with HIV, as well as any forms of health workers' stigmatizing behaviour towards these people.

The questionnaire used in the survey is in the Appendix 2.



4. ORGANIZING AND CONDUCTING THE STUDY

4.1. Time and method of the study

A joint research team on the level of Bosnia and Herzegovina was created for the study purpose, which was made of the representatives of Public Health Institute of Republic of Srpska and Public Health Institute of BiH Federation.

4.2. Field work

Public Health Institute of Republic of Srpska was in charge of conducting the field study in Republic of Srpska and Brčko District, while in BiH Federation it was Public Health Institute of BiH Federation. The field work study was carried out in the second half of June and the first week of July. Study research administrators on the field were the participants employed in the institutions in charge of conducting the study, who already have experience with this kind of work. The associates from the regional institutes for public health in Republic of Srpska, Health Department of Brčko District and cantonal departments of health in BiH were involved in the field work and they collected questionnaires from the study administrators and organized study implementation (handing out questionnaires to health workers in health institutions and collecting filled-in questionnaires).

Before the field work started, the health institutions which took part in the study were informed in written about the aim and method of the study and they gave written consent for its implementation. Directors of health institutions appointed associates for conducting the study, who organized interviewee surveys with the study administrators, at the arranged time and place. Participation of health workers in the study was voluntary. After getting the questionnaires from study administrators and associates in their health institutions, the interviewees filled in the questionnaires and returned them in sealed, blank envelopes. As the questionnaire didn't have any personal information, the anonymity of the participants in the study was ensured in that way. The questionnaires which were filled in and put in envelopes, were delivered to the research team by study administrators.

Before the study was carried out, the associates and study administrators went through a one-day training in conducting the study.

4.3. Monitoring and evaluation

For monitoring purposes a team of consultants and the employees from the institutions which were in charge of conducting the study was engaged. During the study the team for study monitoring carried out the supervision of the communication process, field work and data input process. Data input process was controlled by checking randomly selected questionnaires.

After submitting the report the complete study will be evaluated by the HIV project monitoring and evaluation unit.



5. STATISTICAL DATA PROCESSING

5.1. Description

With the aim to describe the sample, ie. demographic and work characteristics of the interviewees, the level of health care and health workers' categories, personal contacts with PLHIV and HIV/AIDS education, frequencies, percentages, arithmetic means and standard deviations were calculated.

5.2. Assessment of population proportions

For the evaluation of population proportions (prevalence) of knowledge, behaviour, attitudes, discrimination/stigma, as well as the arithmetic means and the degree of scales and indexes variability derived from them, appropriate 95% trust intervals were also calculated.

Proportions, population totals, arithmetic means and regression coefficients were assessed by using population/sample metric coefficients, calculated in the way that they present the population of all health workers in Bosnia and Herzegovina. Post-stratified metric coefficients for other socio-economic categories were not used. The assessments of the variances and intervals of trust involved (where necessary) the precision of stratification, cluster sampling and sample ponders, by using linearization technique of Taylor's series for complex samples.

5.3. Assessment of differences

The importance of the differences among subsamples, ie. different categories of interviewees, was calculated with Student's t-test and Fisher variance analysis when the variables measured on bar interval level are in question, ie. with Pearson's chi-squared test when nominal variables are in question.

5.4. Connection analysis

The connection among chosen scales, indexes and indicators with important independent factors, as well as with other indicators, controlled for simultaneous effects of demographic, professional and work characteristics of health workers or their personal experience with HIV/AIDS, ie HIV/AIDS education was analysed with a number of multiple linear and logistic regression models.

5.5. Statistical significance

Statistical significance was defined as $p < 0.05$.

5.6. Used statistical programme packages

The analyses were done by using specific procedures for complex samples in statistical packages STSTS version 11.1, (StataCorp LP College Station, TX, USA) and PASW Statistics 19, version 19.0 (SPSS, Inc., 2009, Chicago, IL, USA).



6. STUDY RESULTS

6.1. Socio-demographic characteristics of the interviewees

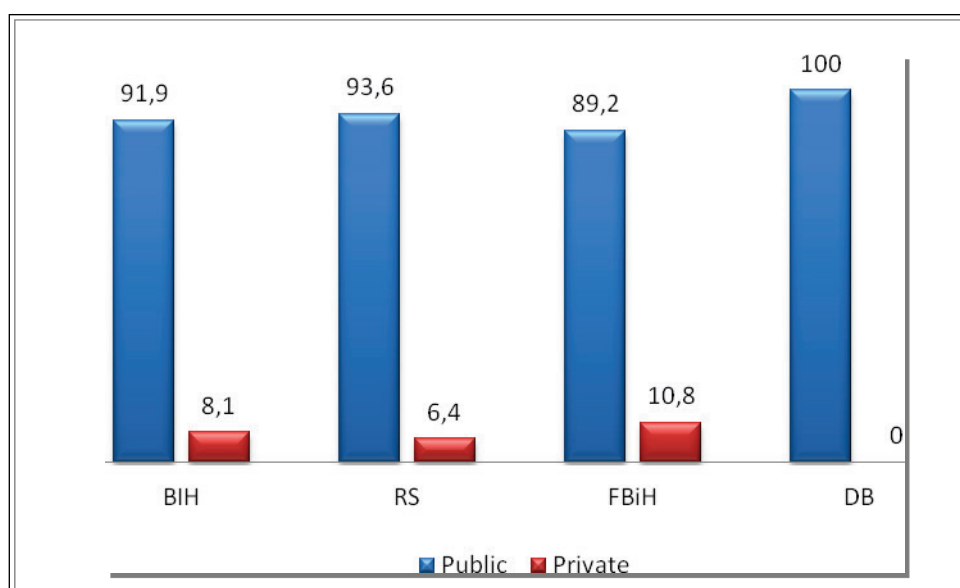
2220 health workers from Bosnia and Herzegovina took part in the study, of which 919 (41.4%) from Republic of Srpska, 1118 (50.4%) from Bosnia and Herzegovina Federation and 183 (8.2%) from Brčko District. The highest percentage of health workers included in the study work on the primary level of health care (42.3%), approximately one third works in hospitals, ie. on secondary level (32.0%), and one third on the tertiary level of health care (21.7%), (Table 1).

Table 1. Structure of health workers who took part in the study according to the levels of health care and BiH entities, year 2011.

Level of health care	Republic of Srpska		Bosnia and Herzegovina Federation		Brčko District		Total	
	Number	%	Number	%	Number	%	Number	%
Primary	371	40,4	467	41,8	100	54,6	938	42,3
Secondary (hospitals)	292	31,8	335	30,0	83	45,4	710	32,0
Blood transfusion Institution	71	7,7	20	1,8	0	0,0	91	4,1
Tertiary	185	20,1	296	26,5	0	0,0	481	21,7
Total	919	100	1.118	100	183	100	2.220	100

The study included the highest percentage of health worker from the public sector (91.9%), and 8.1%, from the private sector, a significantly higher number from Bosnia and Herzegovina Federation, compared to Republic of Srpska and Brčko District ($p=0.000$), (Graph 1).

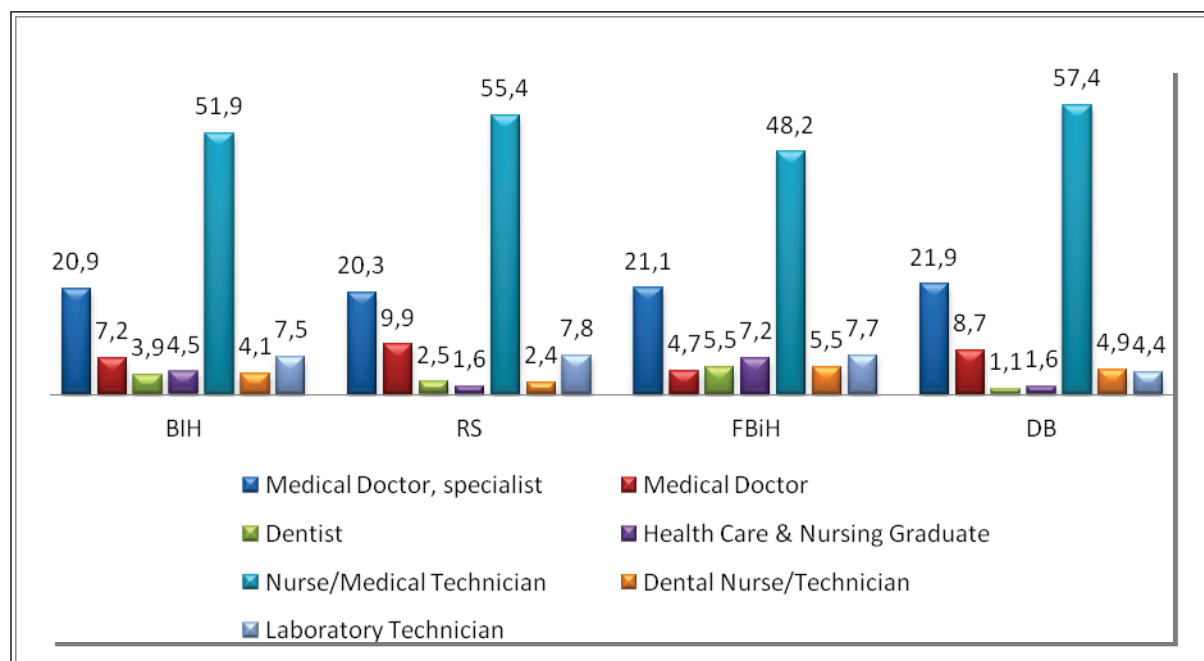
Graph 1. Percentage of health workers in public and private sector in BiH and entities



Approximately one half of health workers, involved in the study are nurses/medical technicians with secondary school or two-year college qualifications (51.9%), every fifth interviewee is a PhD in medicine – specialist (20.9%), 7.5% are laboratory technicians, and 7.2% are medical doctors. Less than 5% of the interviewees are *health care & nursing graduates (four-year studies)* (4.5%),

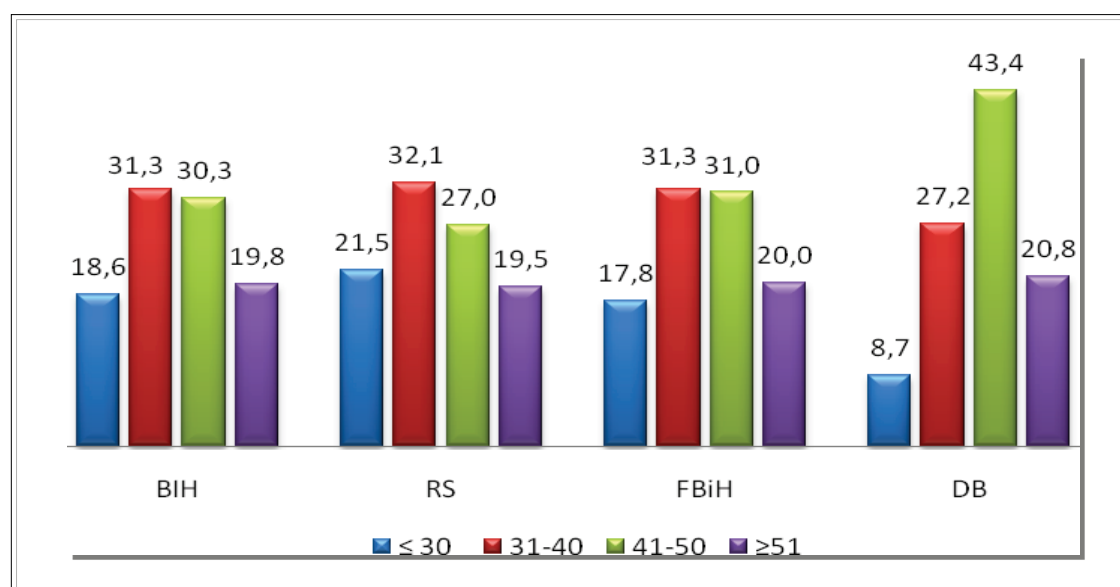
dental nurses/technicians (4.1%) and dentists (3.9%). The proportion of the professions is similar in all three entities ($p=0,183$), (Graph 2).

Graph 2. Proportion of health workers in BiH according to their professions and entities (%)



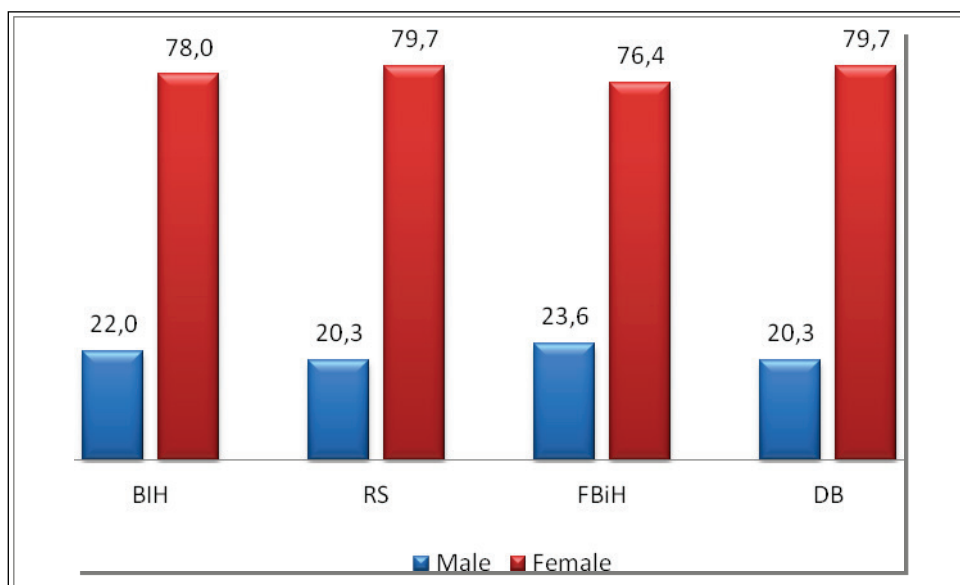
Health workers involved in the study carried out in Bosnia and Herzegovina are on average 41.06 years old ± 10.2 years (SD), where those from Republic of Srpska are considerably younger (40.3 years) with a higher percentage in the age group from 31 to 40 years (21.5%), and those from Brčko District are considerably older than the others (43.6 years), with the highest percentage in the age group from 41 to 50 years (43.4%) ($p=0.000$), (Graph 3).

Graph 3. Percentage of health workers in BiH according to age groups



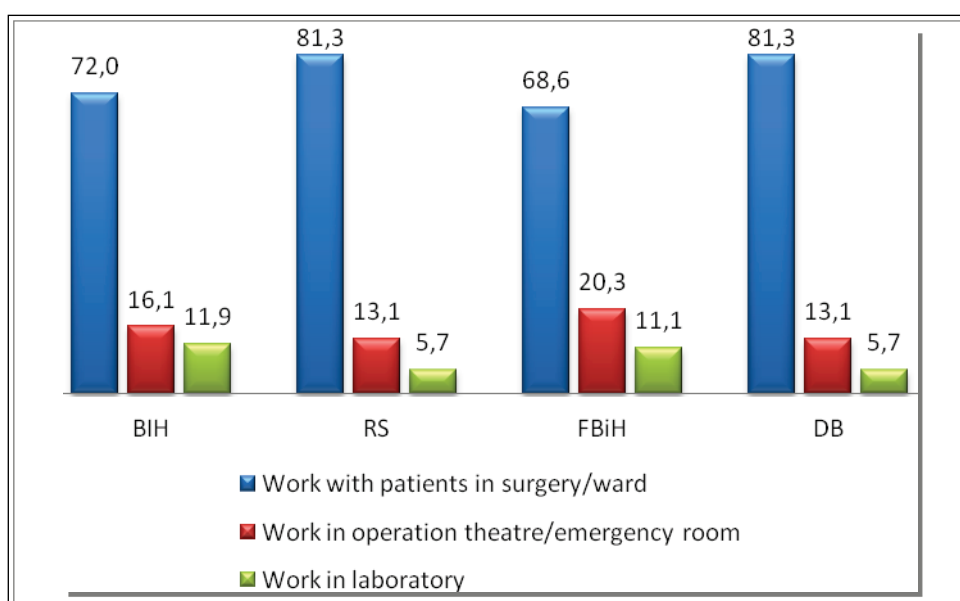
More than three thirds of the health workers involved in the study are women (78.0%), while every fifth interviewee is male (22.0%), without a significant difference among administrative groups ($p=0,183$), (Graph 4).

Graph 4. Proportion of health workers involved in the study in BiH, according to gender (%)



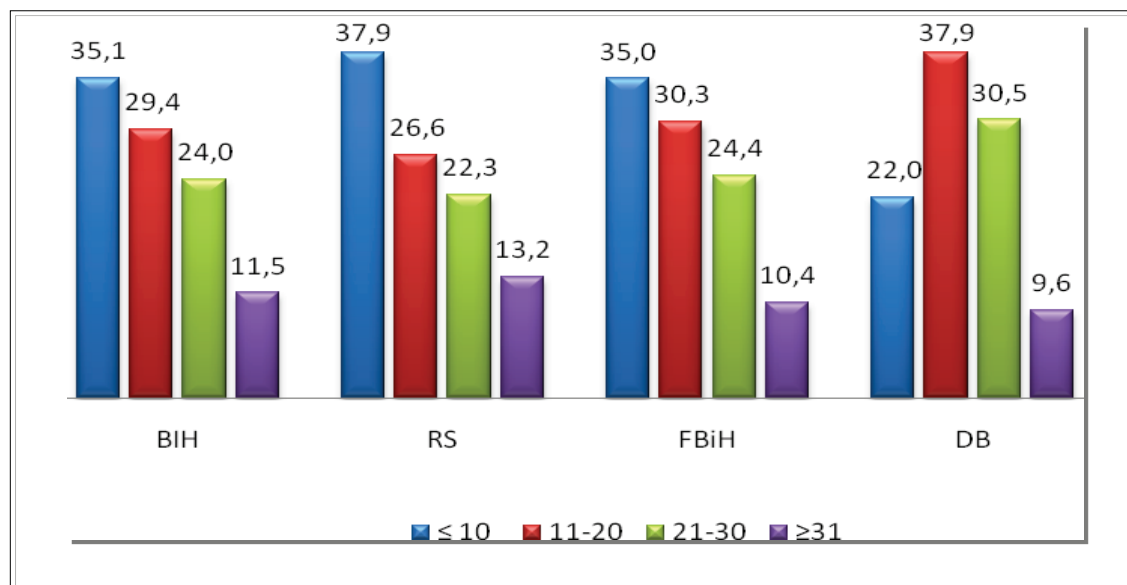
Approximately three thirds of health workers (72.0%) perform activities in direct contact with patients in surgeries or wards in their workplace, where the percentage is considerably lower in BiH Federation (68.6%) compared to Republic of Srpska (81.3%) and Brčko District (81.3%), ($p=0,000$). Considerably higher number of interviewees work in an operation theatre or emergency rooms in Bosnia and Herzegovina Federation (20.3%), compared to Republic of Srpska and Brčko District (13.1%) ($p=0,000$), (Graph 5). Every eight health worker involved in the study in Bosnia and Herzegovina works in a laboratory (11.9%).

Graph 5. Percentage of health workers in BiH and entities according to activities in the workplace



Health workers involved in the study have on average 16.7 years of working age \pm 10,8 years (SD). The highest percentage of interviewees have less than 10 years of working age (35.1%), where health workers in Brčko District have considerably longer working age (18.8 years), with working age groups from 11 to 20 years (37.9%) ($p=0.000$), (Graph 6).

Graph 6. Percentage of health workers in BiH according to working- age years

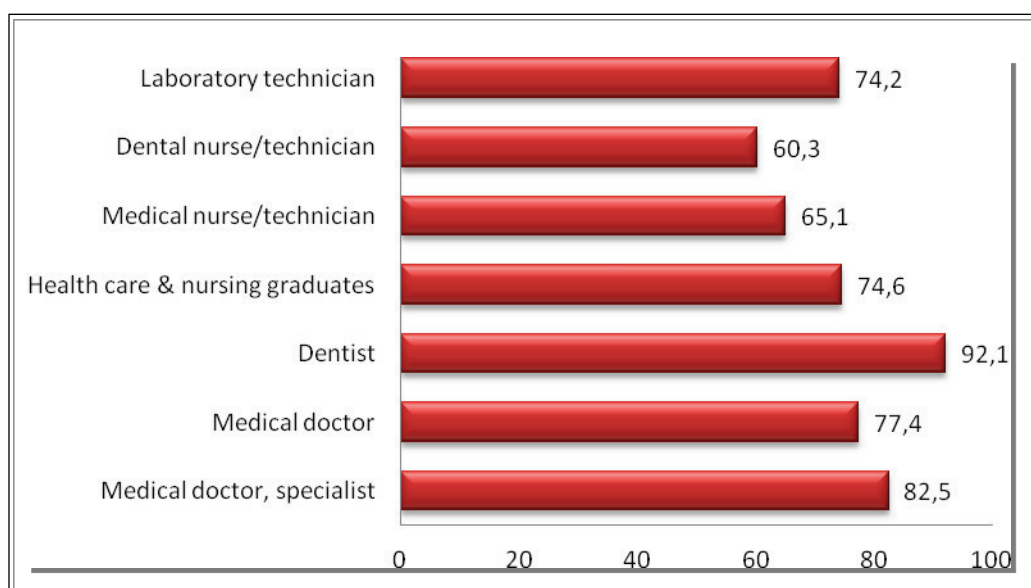


6.1.1. HIV/AIDS education

Indicator no. 1 Percentage of health workers who had any kind of HIV/AIDS education

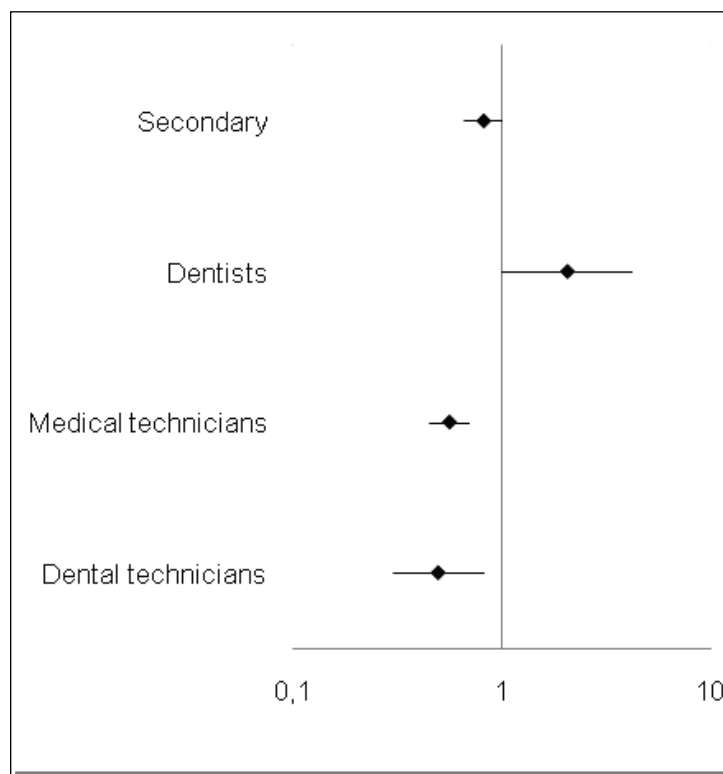
More than two thirds of health workers (68.7%) had some kind of HIV/AIDS education, with a slightly higher percentage in Republic of Srpska (70.3%) ($p=0.001$). Most often, dentists received education (92.1%), and least often dental technicians (60.3%) ($p=0.030$), (Graph 7).

Graph 7. Percentage of health workers who had HIV/AIDS education



Dentists, as well as health workers from the primary and tertiary level of health care had HIV/AIDS education more often, while health workers from the secondary level, nurses and dental technicians received education more rarely (Graph 8).

Graph 8. Predictors of HIV/AIDS education which health workers in BiH received (multiple logistic regression model)



Almost two thirds of the interviewees (65.1%) consider the knowledge gained during the education useful in practice, while a very small percentage (2.6%) find there was no benefit from the education.

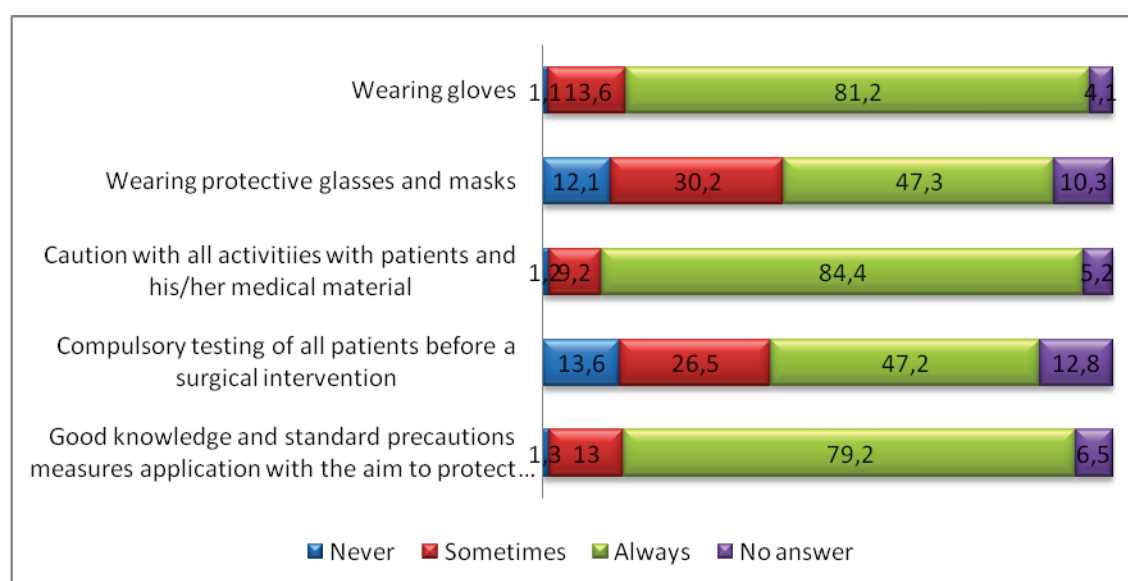
The highest percentage of health workers in BiH are of the opinion that they have average HIV/AIDS knowledge (74.8%), and every fifth thinks he/she has little HIV/AIDS knowledge (20.1%).

6.1.2. Health workers' knowledge about the basic measures for preventing HIV infection in the workplace

Indicator no. 2 Percentage of health workers who know all the basic measures for preventing HIV infection in the workplace

Only 2.5% of health workers know all the basic measures for preventing HIV infection in the workplace. On average, they know three out of five measures. 3.4% of health workers don't know any measures. Most often, they know four out of five measures (42.6%), (Part III, Table 56).

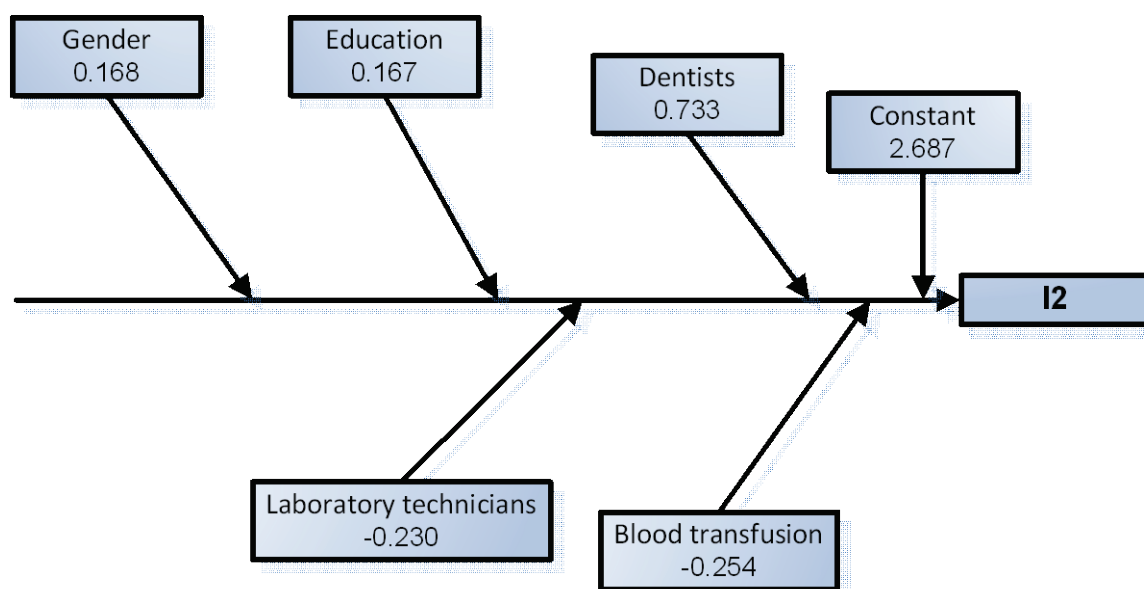
The percentage of health workers who know each of the basic measures for preventing HIV infection in the workplace is relatively high, except for the measures – compulsory testing of all patients before performing a surgery and wearing protective glasses and masks, (Graph 9).

Graph 9. Evaluation of health workers' knowledge about the basic measures for HIV infection protection

Knowledge about the basic measures for HIV infection prevention in the workplace is considerably different among health workers' professions, whether it refers to an average number of measures that health workers know ($p=0.000$), or a scale of possible correct answers ($p=0.030$). In the first case dentists know most (3.8), then PhDs in medicine – specialists (3.2), and laboratory technicians, who know the least (2.9). (Part IV, Table 66).

When asked the question about the compulsory testing of all patients before a surgery, 47.2% of the interviewees answered that it should always be done, while 26.5% of the interviewees had the opinion that it should be done sometimes. (Part II, Table 16, penultimate).

Dentists, female interviewees, and those who had any kind of HIV/AIDS education know the measures for HIV infection prevention in the workplace considerably more often. Contrary to them, people working in blood transfusion institutions and laboratory technicians know considerably less about the measures for HIV infection prevention in the workplace (Graph 10), (Part V, Table 77).

Graph 10. Predictors of BiH health workers' knowledge about the basic measures for HIV infection prevention (I2, indicator number 2)

6.1.3. Exposure and behaviour of health workers in the context of HIV infection prevention

Surgery interventions, when health workers are in contact with blood and other body fluids, are performed by 15% of health workers. Giving injections, infusion and bandaging up wounds in everyday work is performed by a little more than half of health workers. Delivering babies is performed by 10.3% of workers on average, and about 7% of health workers fill in or extract teeth every day. Other interventions when they are in contact with patient's blood or other body fluids, are performed by 27.2% of health workers, (Part II, Table 12).

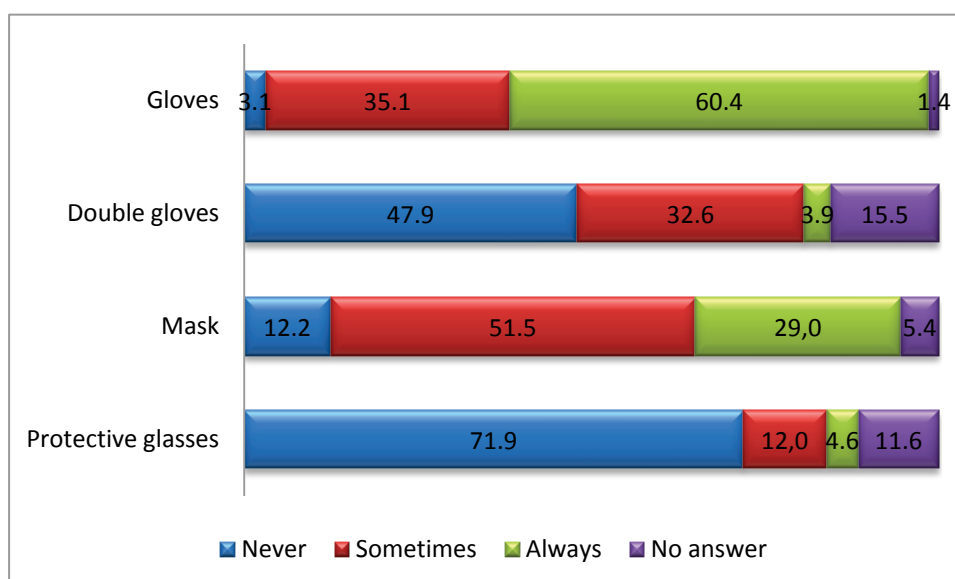
Accidental injuries of health workers increase the risk of infection. Among the questioned health workers, while working with patients, the most common was the contact with patients' blood via damaged skin (35.1%), the prick of a needle (30.6%), more often in Republic of Srpska (33.4%) than in BiH Federation (29.5%) and Brčko District (23.5%). Patient's blood spraying into eyes or onto other mucous membrane was recorded in 26.1%, and injuries caused by sharp objects in 24.1% of health workers (Part II, Table 13).

Behaviour of health workers while performing their professional activities can significantly contribute to the occurrence of the HIV infection risk.

Indicator no. 3 Percentage of health workers who take basic infection preventative measures during the interventions where the contact with patient's blood and body fluids is possible.

Almost two thirds of health workers (60.4%) always wear gloves, 35.1% sometimes, and 3.1% of health workers never wear gloves. While performing interventions where the risk of HIV transmission is present, 3.9% health workers always wear double gloves, 32.7% wear double gloves sometimes, while 47.9% health workers never wear gloves. 30.1% of health workers always wear a mask, more often in FBiH (35.7%), compared to Brčko District (25.1%) and Republic of Srpska (20.9%). 12.2% never wear a mask, and a slightly more than a half of health workers wear it sometimes. Besides a mask, wearing protective glasses is a preventative measure and 12.2% of health workers wear them sometimes, 71.8% never wear them, and only 4.6% wear them all the time, (Graph 11), (Part II, Table 14).

Graph 11. Frequency of taking preventative measures at work in BiH

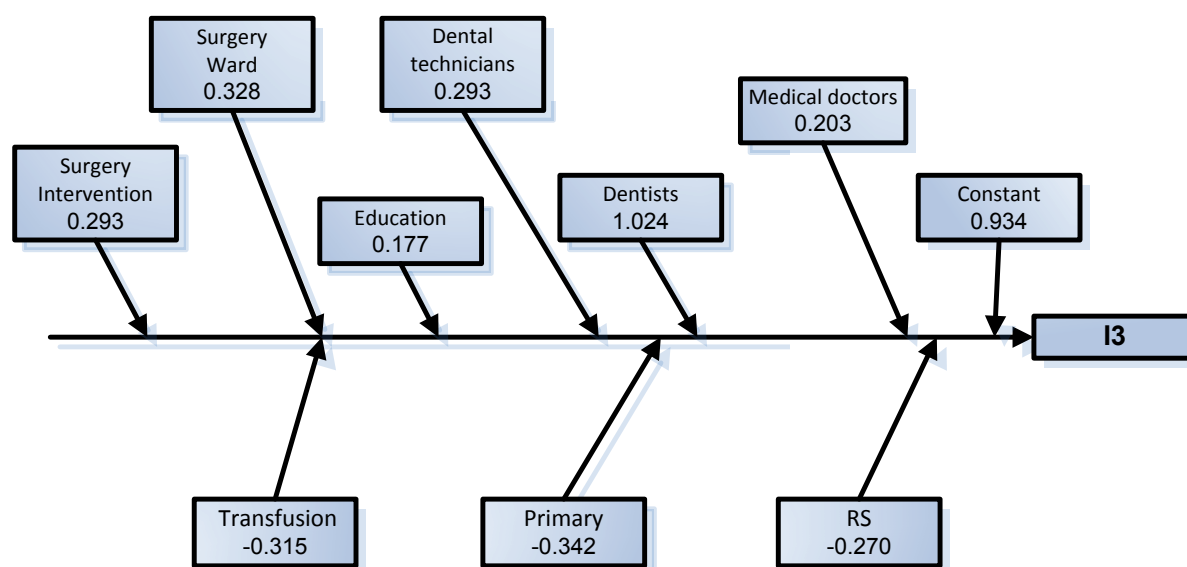


Percentage of health workers who take preventative measures also differs significantly within professions ($p=0.000$). Laboratory technicians take them most rarely (0.8%), and dentists most often (2.1%). 44.3% of laboratory technicians, 23.1% of PhDs in medicine - specialists, 22.4% of medical doctors, 6.7% dentists, 33.8% nurses/medical technicians and 27.4% of dental nurses/technicians take no preventative measures at all, (Part IV, Table 67). 8.1% dentists, 1.2% PhDs in medicine - specialists, 0.1% medical doctors, 1.3% of laboratory technicians and 2.2% of dental nurses/technicians take all four preventative measures.

When talking about infection prevention measures during the interventions when the contact with patients' blood or his/her body fluids is possible, the percentage of health workers who take all four measures is almost negligible (0.98%), ie. on average they take one or two out of four tested measures. No measures at all or one or two measures are taken by a similar percentage of health workers (around 30% for both), and further, the percentage falls. interviewees wear protective glasses and a mask most rarely. Number of average measures taken in the Republic of Srpska is considerably lower (0.99%) than in BiH Federation and Brčko District ($p=0.000$). When tests are done according to categories, there are no significant differences between the entities ($p=0.294$), (Part III, Table 57).

The interviewees from Republic of Srpska working on the primary level of health care and health workers in blood transfusion institutions take basic measures for preventing infection during interventions considerably more rarely, compared to dentists, dental technicians, medical doctors, workers on wards and surgical departments and those who had HIV education (Graph 12), (Part V, Table 78).

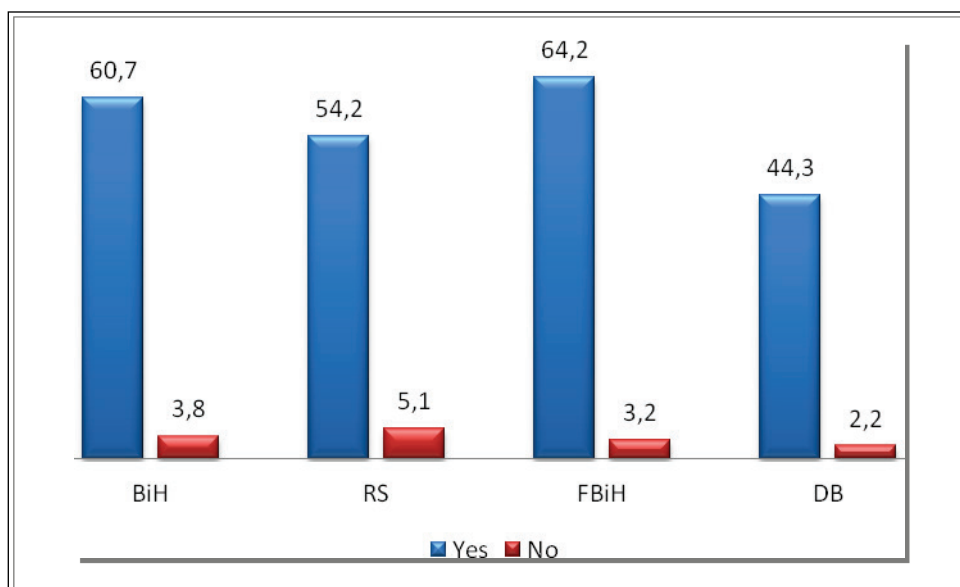
Graph 12. Predictors of taking basic measures for infection prevention during interventions among health workers in BiH, when the contact with patient's blood or his/her body fluids is possible (I3, indicator number 3)



One tenth of medical workers always or sometimes throw away medical waste (used syringes, needles, infusion systems, cannulas) into rubbish bins and/or plastic bags together with other rubbish, while more than a half (59%) workers never do that. 70.1% of workers always throw medical waste into impenetrable containers (dustbins with solid walls) (Part II, Table 15).

When they know that the patient is a person living with HIV, 60.6% of health workers take more extensive preventative measures, while 3.8% don't take these measures, slightly more health workers in Republic of Srpska (5.1%) compared to BiH Federation (3.2%) and Brčko District (2.2%), (Part II, Table 17).

Graph 13. Taking extensive preventative measures with HIV positive patients in BiH

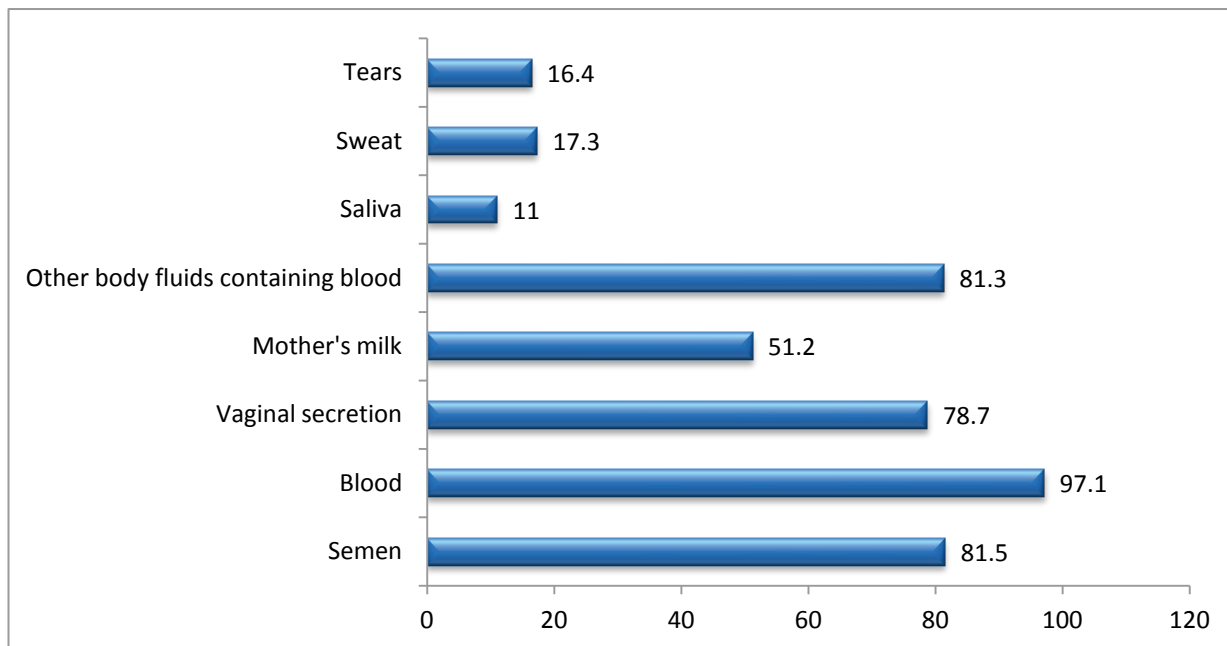


6.1.4. Health workers' knowledge about the ways HIV infection is transmitted

Indicator no. 4 Percentage of health workers who gave correct answers about the ways HIV is transmitted

The percentage of of health workers who gave correct answers to all the questions about the ways HIV is transmitted by body fluids (8 questions in total) is 17.1% and is similar in entities and Brčko District ($p=0,382$), (Part III, Table 58).

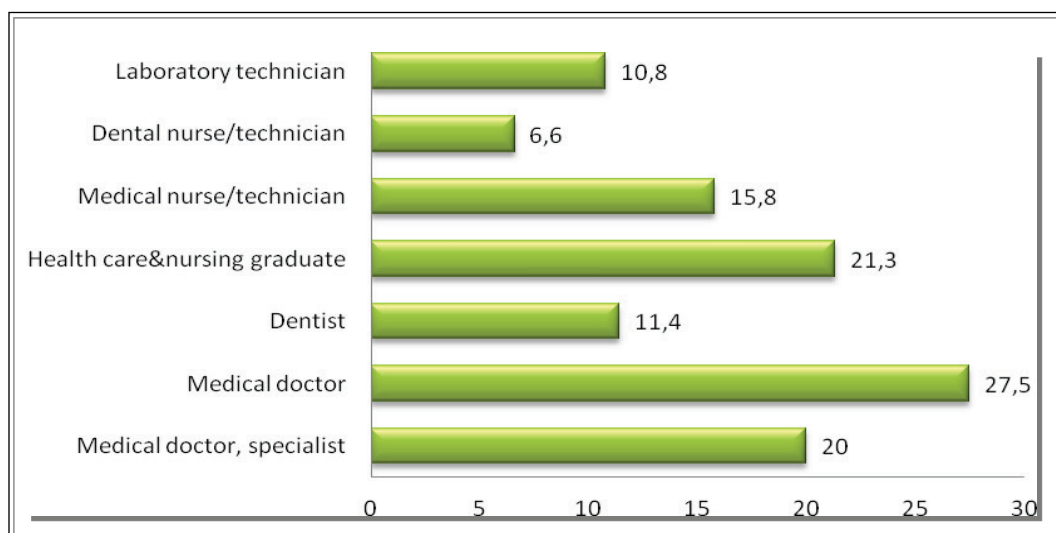
The highest percentage of the interviewees (97.1%) named blood, semen, other body fluids containing blood (81.3%) and mother's milk as a means of transmitting HIV. Much smaller percentage of the interviewees (17.3%) knew that sweat (17.3%), tears (16.4%) and saliva (11,0%) are not the ways of transmitting HIV (Graph 14), (Part II, Table 18).

Graph 14. *Percentage of correct answers referring to body fluids*

Result analysis showed that the mean value of the correct answers about the ways HIV infection is transmitted is 5.4 per interviewee and is considerably higher ($p=0.000$) in Republic of Srpska (5.7) and Brčko District, compared to BiH Federation (5.3), (Part III, Table 58).

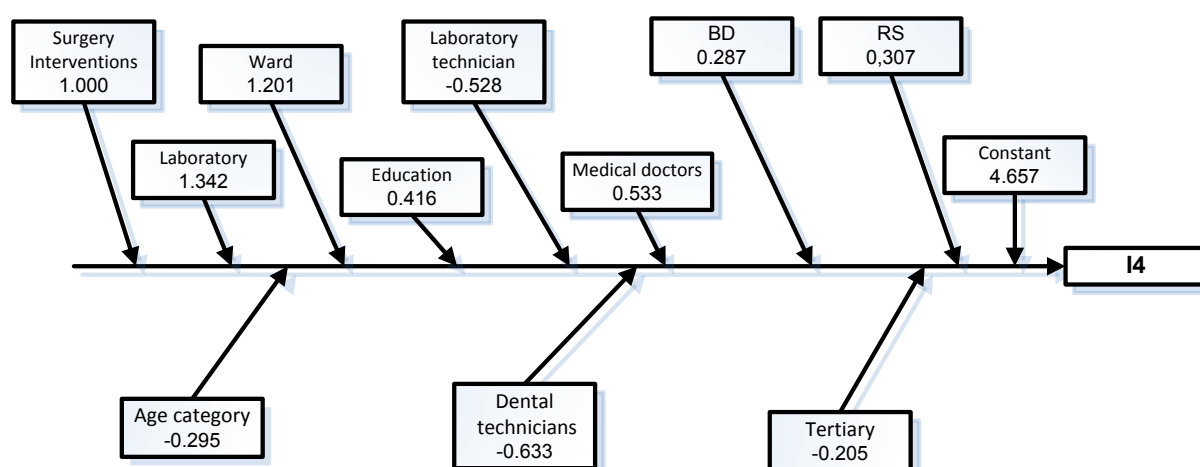
Result analysis of the health workers' knowledge about body fluids as the means of transmitting HIV infection shows considerable differences among professions ($p=0.000$). On average, medical doctors had the most correct answers (6.3) and the least dental technicians (4.6), (Part IV, Table 68).

Medical doctors gave correct answers to all the questions in the highest percentage (27.5%), while dental technicians had the lowest percentage of correct answers (6.6%) (Part IV, Table 68), (Graph 15).

Graph 15. *Percentage of all correct answers given by medical workers in BiH about the ways HIV infection is transmitted according to their professional activities*

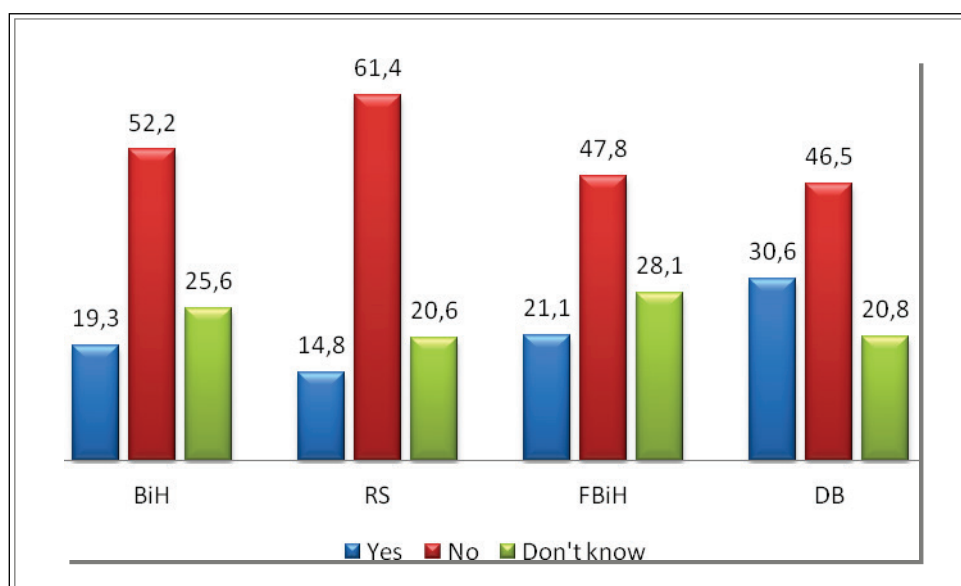
By analyzing the answers about the likelihood of transmitting HIV infection by body fluids, it was established that health workers who work in laboratories, surgeries/wards, perform surgical interventions, medical doctors and those workers who had any kind of HIV education, health workers from Republic of Srpska and Brčko District have more knowledge, while the interviewees on the tertiary level of health care, dental and laboratory technicians, as well as elderly workers, have less knowledge about this issue (Graph 16), (Part V, Table 79).

Graph 16. Predictors of BiH health workers' knowledge about the likelihood of HIV transmission by body fluids (I4, indicator number 4)



Slightly more than a half of the interviewees (52.2%) correctly answered that HIV can't be transmitted by a mosquito bite, more in Republic of Srpska (61.4%) compared to BiH Federation and Brčko District (46.5%), although the difference was not statistically important ($p=0.144$), (Graph 17).

Graph 17. BiH Health workers' knowledge about a mosquito bite as a means of HIV transmission



6.1.5. Health workers' general knowledge about HIV/AIDS

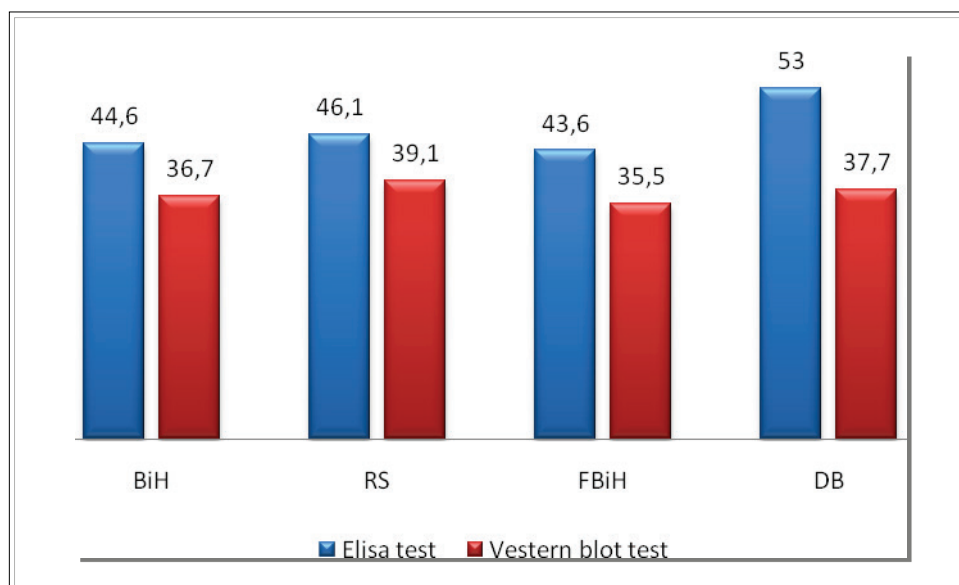
60% of the interviewees answered that the standard sterilization procedures are sufficient to sterilize instrument used for treating people living with HIV and there were no significant differences between the entities and Brčko District, (Part II, Table 20).

Most interviewees correctly answered that a person who looks healthy can transmit HIV (92.3%), without significant differences between Republic of Srpska and BiH Federation entities and Brčko District ($p=0.888$), (Part II, Table 21).

More than a third of the interviewees, without a significant difference between the two entities and Brčko District ($p=0.522$), gave incorrect answers that all pregnant women infected with HIV will have babies who contracted AIDS (Part II, Table 22).

44.6% of the interviewees think that Elisa test is safe for detecting specific antibodies in HIV infection, a slightly higher number of the interviewees from Brčko District compared to Republic of Srpska and BiH Federation entities, but without a significant difference ($p=0.296$), while slightly more than a third of the interviewees (36.7%) know that Western blot is a reliable diagnostic method, without a significant difference between the entities and Brčko District ($p=0.175$) (Graph 18), (Part II Table 23).

Graph 18. *BiH Health workers' knowledge about the tests for reliable diagnosis of specific HIV antibodies*



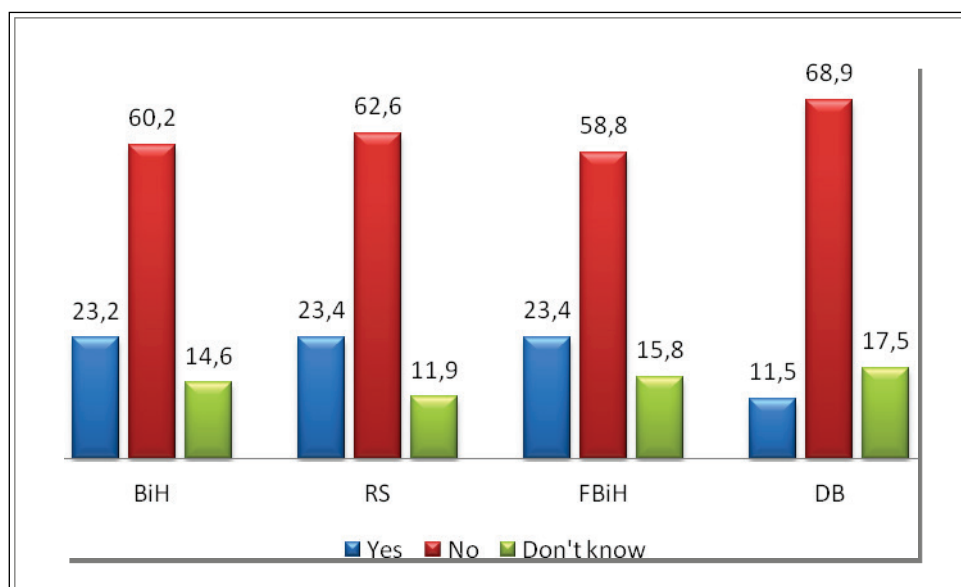
Slightly more than a half of the interviewees (52%) know that HIV infection can be detected with certainty 6 to 8 weeks after being infected, without a significant difference in the entities and Brčko District ($p=0.616$), (Part II, Table 24).

81.5% of the interviewees know that a HIV infected person can live more than ten years without having AIDS symptoms, without a significant difference in the entities and Brčko District, (Part II, Table 25).

Almost all of the examinees knew that even a single unprotected sexual intercourse with a person living with HIV can lead to HIV infection, without a significant difference in the entities and Brčko District, (Part II, Table 26).

60.2% of health workers know that HIV can't be transmitted by using the same cutlery, 23.2% think this could be a possible way of HIV transmission, 14.5% don't know the answer. The examinees from BiH Federation showed the least knowledge, but without statistically significant differences compared to Republic of Srpska and Brčko District ($p=0.196$), (Graph 19), (Part II, Table 27).

Graph 19. *BiH Health workers' knowledge about HIV transmission by sharing cutlery*



6.2. Health workers' attitudes towards people living with HIV

Health workers' attitudes towards people living with HIV were observed in relation to stigma elements: irrational fear, condemnation, blame, discrimination and shame. The results were shown according to the indicators for the state level, both entity levels and Brčko District, and health workers' profiles.

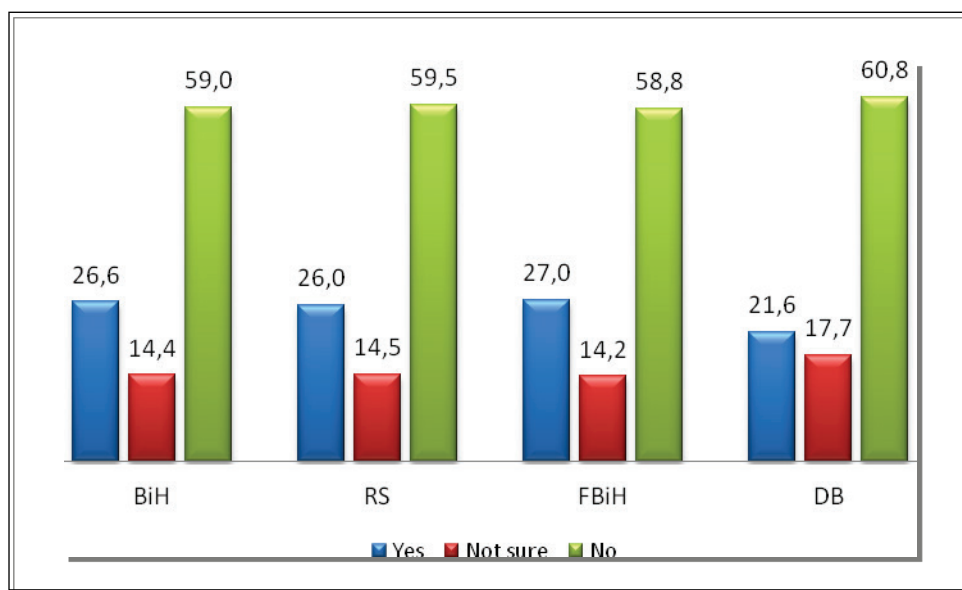
6.2.1. Irrational fear of people living with HIV

Feeling of fear among health workers was estimated based on the question whether they are afraid to give an injection to a person living with HIV, touch his/her saliva or clothes, and whether they have fears because their child attends the same school as a child living with HIV.

Indicator br. 5 Percentage of health workers who are afraid to give an injection to a person living with HIV

Slightly more than a quarter of the interviewees (26.6%) are afraid to give an injection to a person living with HIV, most of them in BiH Federation (27.0%) and the least in Brčko District (21.6%). A part of the interviewees (14.4%) was indecisive about this question, most of them in Brčko District (17.7%). There are no differences concerning this question between the entities and Brčko District ($p=0.676$), (Graph 20), (Part II, Table 29) and (Part III, Table 59).

Graph 20. *Percentage of health workers who are afraid to give an injection to a person living with HIV*



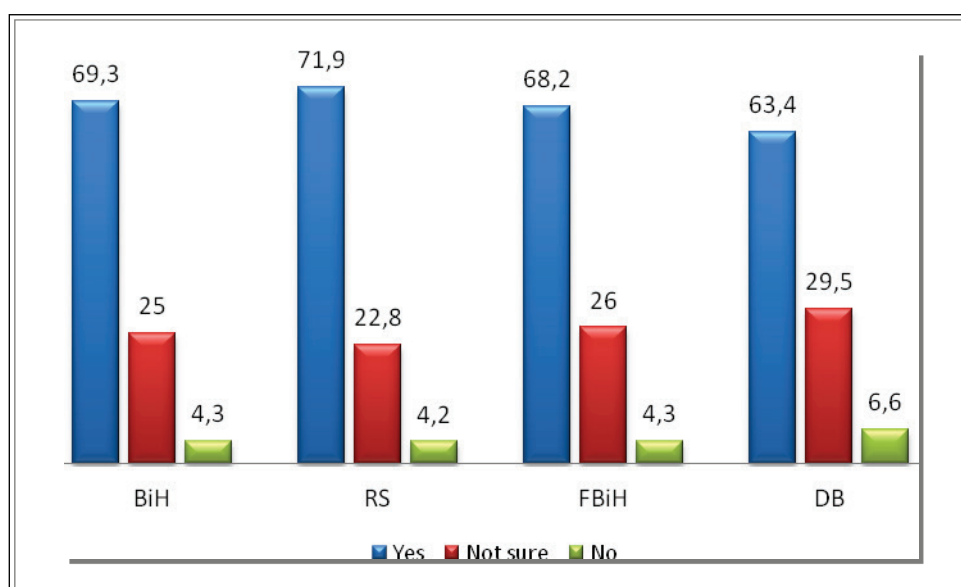
Of all health workers, the highest percentage goes to laboratory technicians (30.1%) who are afraid to give an injection to people living with HIV. In the answer to this question there is no statistically significant difference among health workers' professions ($p=0.056$), (Part 4, Table 69).

Apart from fear of giving an injection, 40.9% of health workers are afraid of the contact with saliva from people living with HIV and 20.3% of the interviewees are not sure whether they are afraid or not. As for this question, health workers from BiH Federation (41.2%) showed the biggest fear, and health workers from Brčko District showed the least fear (33.3%), (Part II, Table 30).

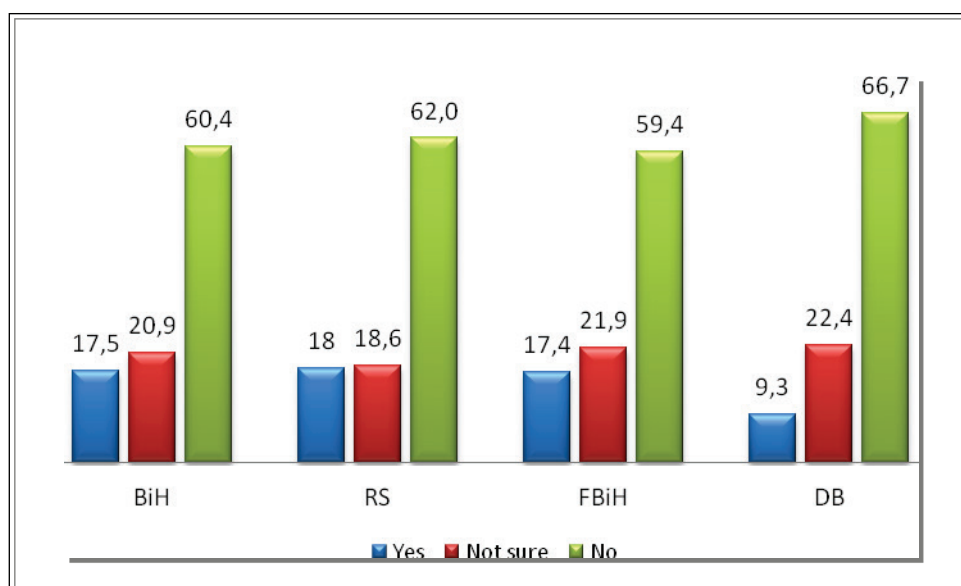
When asked whether they would feel afraid if their child went to school with a child living with HIV, the highest percentage of the interviewees (40.7%) said they wouldn't, but 36.9% said they would, most of them in Republic of Srpska (38.9%) and the least in Brčko District (28.9%), (Part II, Table 31).

6.2.2. Willingness to provide health services to people living with HIV

More than two thirds of the interviewees (69.3%) said they would provide health service to a patient living with HIV without feeling uneasy, ie. feeling afraid, most of them in Republic of Srpska (71.9%) and the least in Brčko District (63.4%). Most of the health workers from Brčko District (29.5%) are not sure whether they would provide health service to a patient living with HIV without feeling uneasy and the least in Republic of Srpska (22.8%). As for this question, there is no statistically significant difference between the entities and Brčko District ($p=0.861$), (Graph 21), (Part 2, Table 33).

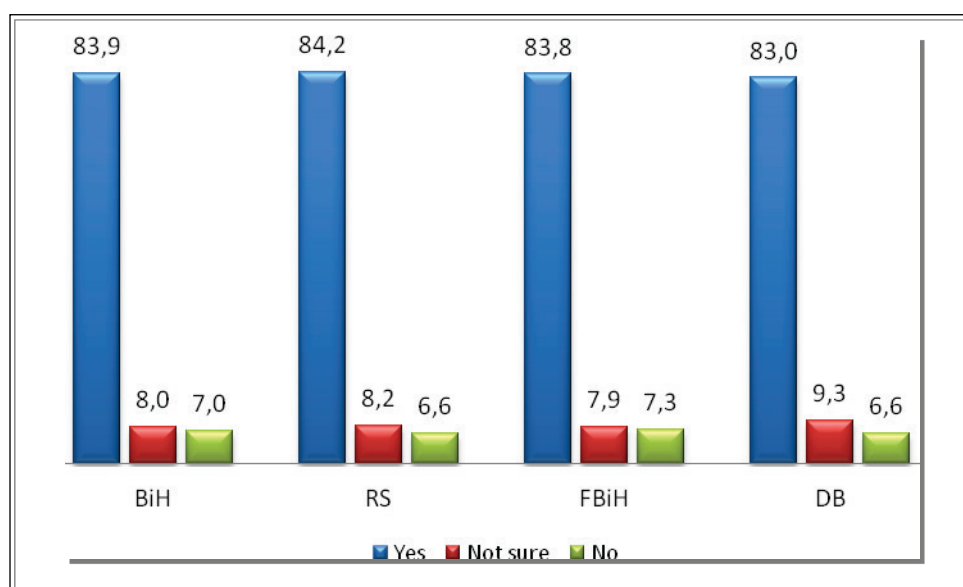
Graph 21. Percentage of health workers in BiH who would provide medical service without feeling uneasy

The majority of the interviewees (60.4%) said they don't avoid touching the clothes and things of the patient known to have/ suspected of living with HIV due to the fear of being infected. The highest number is in Brčko District (66.7%), the smallest in BiH Federation (59.4%). There is no statistically significant difference between the entities and Brčko District in the answer to this question ($p=0.440$), (Part II, Table 34).

Graph 22. Percentage of health workers in BiH who avoid touching the clothes and things of the patients that they know to have or are suspected of living with HIV because of the fear they might get infected

The majority of health workers (83.9%) said that the people who are particularly exposed to risk (sex workers, injection drug users, men having sex with men), deserve to have equal level and quality of health care as other patients. There is no statistically significant difference between the entities and Brčko District in the answer to this question ($p=0.969$), (Part II, Table 35).

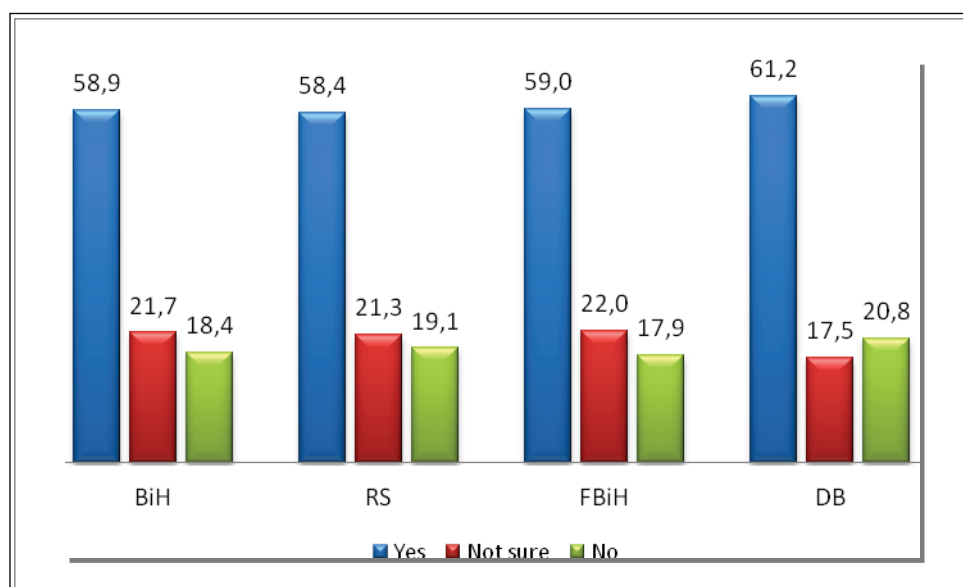
Graph 23. Percentage of health workers in BiH who think that the people who are particularly exposed to risk deserve to have equal level and quality of health care as other patients



6.2.3. Perception of high exposure at work

More than a half of the interviewees think that health workers most often get infected with HIV in the workplace, 18.4% of the interviewees don't agree with that, and 21.7% of the interviewees are not sure. Most uncertain interviewees are from BiH Federation (22.0%), least from Brčko District (17.5%). There is no statistically significant difference between the entities and Brčko District in the answer to this question ($p=0.861$), (Part II, Table 36), (Graph 24).

Graph 24 Attitude of health workers in BiH that workplace is the most common place where health workers can get infected



Approximately one half of the health workers said that they would report discriminating attitude towards people living with HIV to higher authorities, 58.0% in Brčko District, 49.8% in BiH Federation and 47.6% In Republic of Srpska (Part II, Table 55).

6.2.4. Condemnation and blame aimed at people living with HIV

The degree of health workers' condemnation of people living with HIV was measured by applying a 12-degree scale.

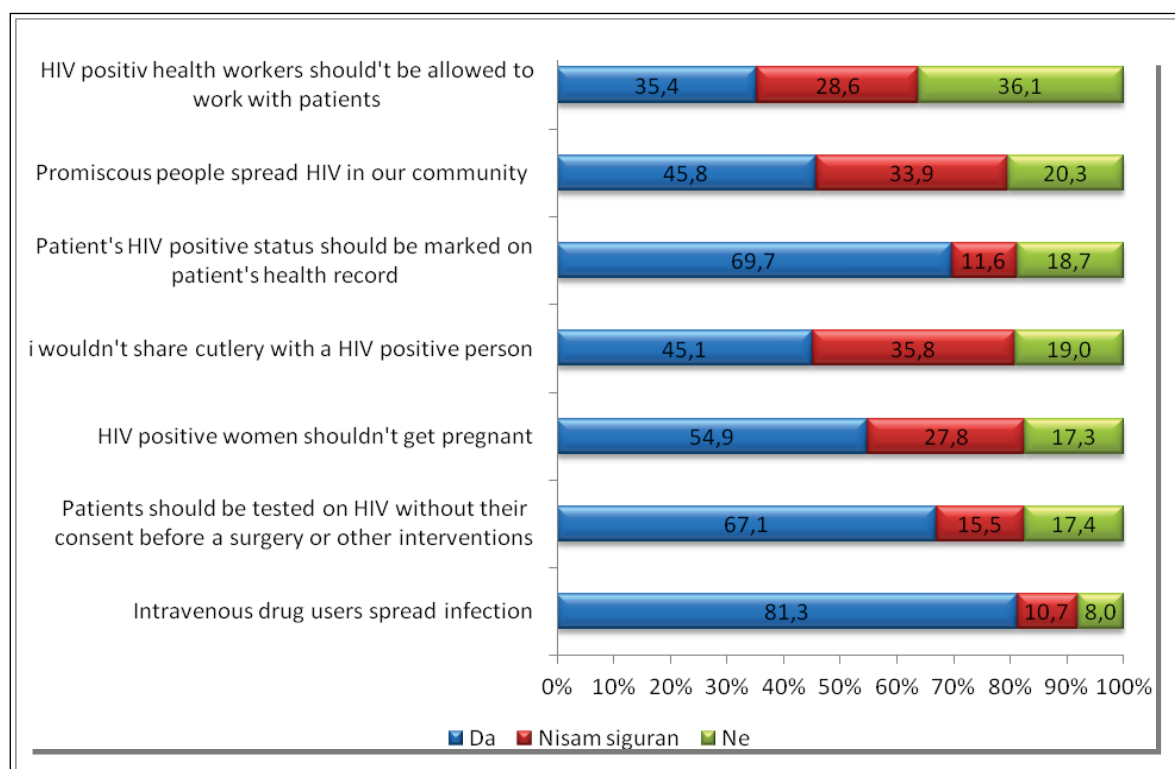
Indicator no. 6 Percentage of health workers who expressed condemnation of people living with HIV in any way

Percentage of health workers who expressed condemnation of people living with HIV in any way (interviewees who, on a 12-question scale, had 1 or more answers expressing condemnation of people living with HIV) is very high, reaching 99.5%, without a significant difference between the entities and Brčko District ($p=0.092$), (Part III, Table 60.2).

The most common answers which show a negative attitude (the sum of 'yes' and 'not sure' answers) towards people living with HIV were:

- intravenous drug users spread HIV infection (92.0%),
 - women living with HIV shouldn't get pregnant (82.7%),
 - patients should be tested on HIV without their consent before an operation or other intervention (82.6%),
 - HIV positive status of people living with HIV should be clearly stated on their medical records and case histories (81.3%),
 - wouldn't share cutlery with a person living with HIV (81.0%),
 - promiscuous people are those who spread HIV infection in the community (79.7%),
 - health workers who live with HIV shouldn't be allowed to work with patients (63.9%).
- (Graph 25), (Part II, Tables 37-46 and Part III, Table 60).

Graph 25. Most common answers of health workers which indicate condemnation of people living with HIV (%)



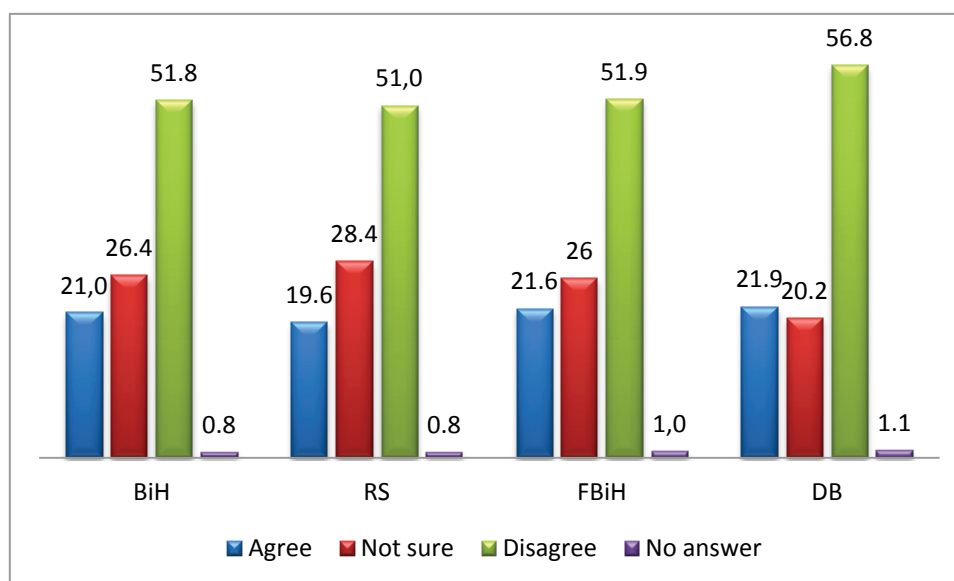
The analysis showed that every health worker in BiH has on average 6.8 answers out of 12, in which he/she expresses condemnation of people living with HIV, with statistically significant differences ($p=0.003$) among Brčko District (6.4), Republic of Srpska (6.7) and BiH Federation (6.8),

According to the professions, higher level of condemnation was expressed by health workers who have secondary school education. There are no statistically significant differences among health workers' profiles ($p=0.245$), (Part IV). However, there is a significant difference in the average number of answers expressing condemnation of people living with HIV ($p=0.000$). It was the highest among dental technicians (7.3), then nurses/medical technicians (7.1) and lowest among doctors specialists (6.1), (Part IV, Table 70).

Indicator no. 7 Percentage of health workers who expressed blame for people living with HIV in any way, ie. who said it's their own fault

Slightly more than one fifth of health workers (21.0%) on the level of Bosnia and Herzegovina think that having AIDS is HIV infected people's fault. The lowest percentage of health workers in Republic of Srpska (19.6%) and the highest in Brčko District (21.9%) have that attitude. Slightly more than a quarter (26.7%) of the interviewees are not sure about their answer, more often in Republic of Srpska (28.4%), less often in Brčko District (20.2%) (Graph 26), (Part III, Table 61).

Graph 26. *BiH health workers' answers to the question (%) 'Most people infected with HIV or having AIDS deserve the blame'*



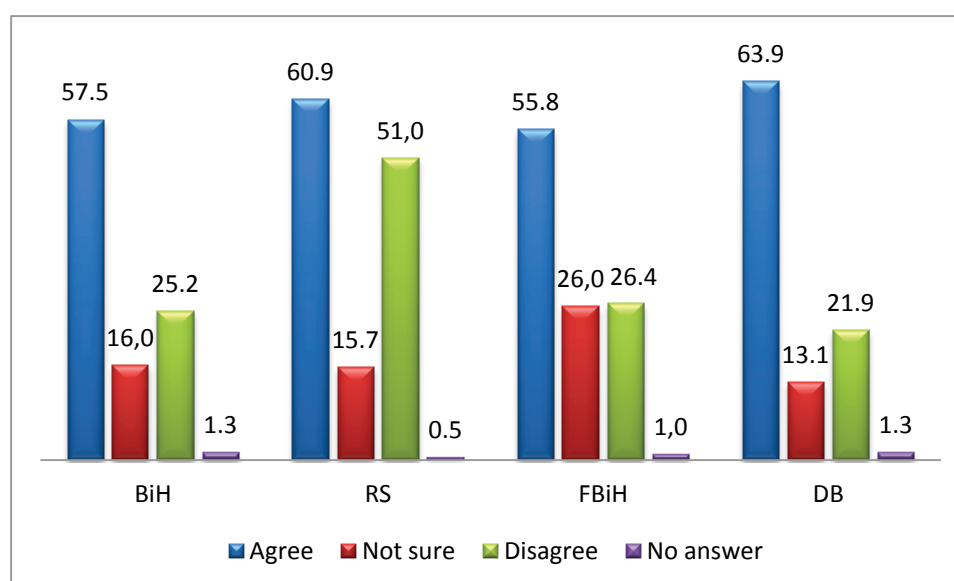
Indicator no. 10 Percentage of health workers who think that a patient's HIV positive status shouldn't be kept secret

One quarter of BiH health workers (25.2%) don't think that a patient's HIV positive status should be kept secret. 16.0% of interviewees answered that they are not sure whether a patient's HIV status should be kept secret, most in BiH Federation (16.2%), the least in Brčko District (13.1%) (Part III, Table 64). There is no statistically significant difference between the entities and Brčko District in the answer to this question ($p=0.210$)

According to professions, university degree health workers don't think that a patient's HIV positive status HIV should be kept secret, most dentists (30.5%), *health care & nursing graduates (four-year studies)* (29.3%) and medical doctors (28,4%); 22.9% of laboratory technicians and 23.8% dental nurses/technicians gave the same answer. Noted differences are not statistically significant ($p=0.219$), (Part IV, Table 74).

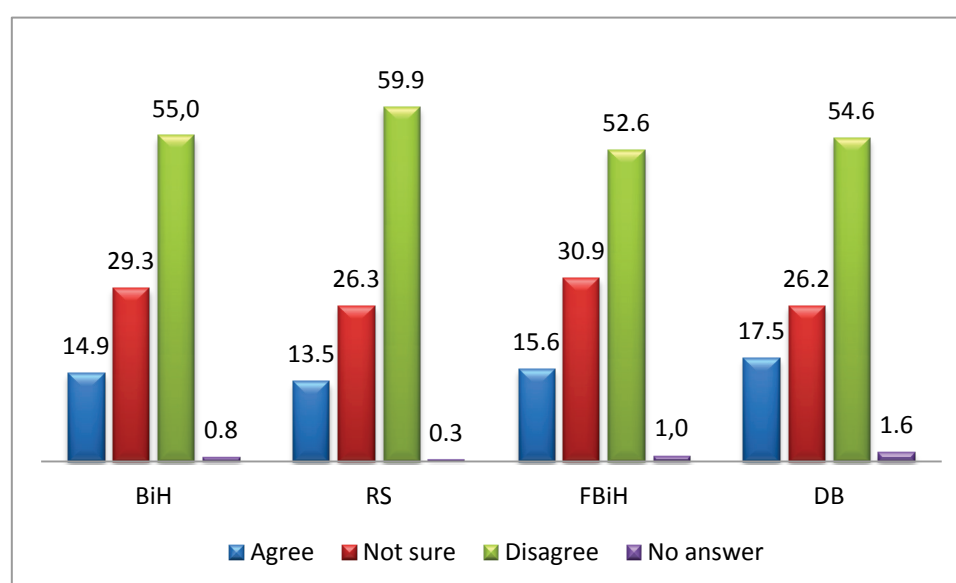
More than one quarter of health workers don't agree that people living with HIV have the right to decide by themselves who should be informed about their HIV status, most of them in Republic of Srpska 27.2%, the least in Brčko District 21.9%, (Graph 27).

Graph 27. *BiH health workers' answers to the question (%) 'People living with HIV have the right to decide by themselves who should be informed about their HIV status'*



Indicator no. 8 Percentage of health workers who showed shame about people living with HIV in any way

When asked whether they would feel shame if HIV were diagnosed to a member of their family, 14.9% of the interviewees said they would feel ashamed, most in Brčko District (17.5%), the least in Republic of Srpska (13.5%), with 29.3% who answered that they were not sure. There is no statistically significant difference between the entities and Brčko District ($p=0.165$), (Graph 28), (Part II, Table 45).

Graph 28. *BiH health workers' answers to the question (%) 'I would feel ashamed if a member of my family were diagnosed with HIV'*

6.2.5. Discrimination of people living with HIV

Discrimination of people living with HIV was evaluated based on five questions referring to their negligence, unnecessary referring them to another health worker, different procedure of instrument sterilization and non-invasive examination, and revealing their HIV status.

Indicator no. 9 Percentage of health workers who witnessed or heard of at least one example of discriminating behaviour towards a patient in their health institution

Up to 78.0% health workers witnessed or heard of discriminating behaviour towards a patient living with HIV in their health institution, most of them in BiH Federation (80.9%), the least in Republic of Srpska (72.1%), with statistically significant difference between the entities and Brčko District ($p=0.103$), (Part III, Table 63).

Dental nurses/technicians witnessed or heard of discriminating behaviour towards a patient living with HIV in their health institutions in the highest percentage (89.5%), dentists (82.1%), and in the lowest percentage medical doctors (66.1%), although the differences are not statistically significant ($p=0.404$), (Part IV, Table 73).

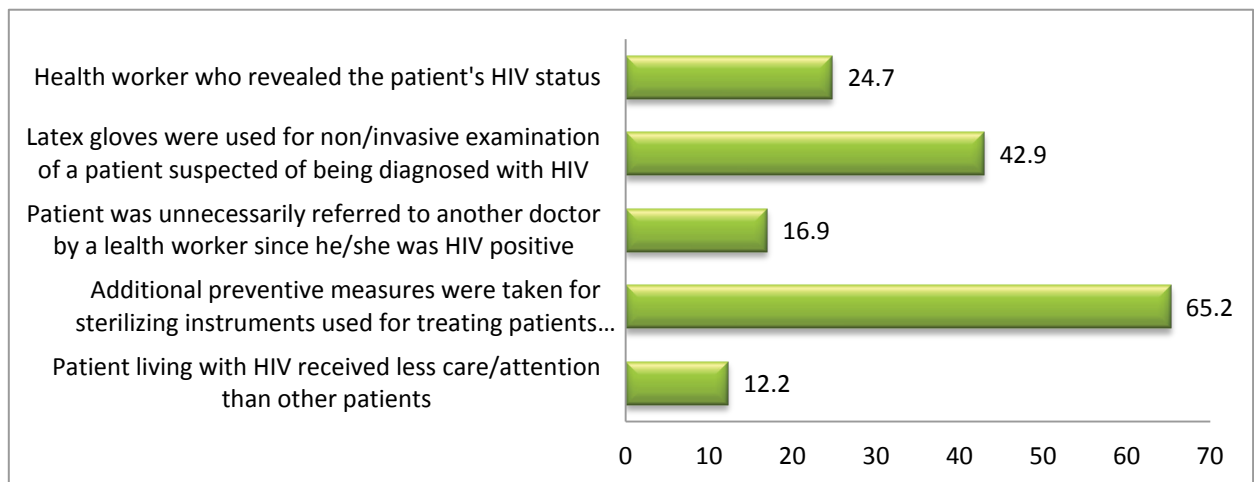
A five-degree scale for evaluating the degree of discrimination was used, according to which every worker had on average 1.6 answers (out of the maximum of five possible answers) which indicate discrimination, considerably less in Republic of Srpska (1.4), compared to BiH Federation (1.7) and Brčko District (1.7), and the differences were statistically different ($p=0.000$), (Part III, Table 63).

Only 1.5% of health workers gave a positive answer to all five questions referring to discriminating behaviour towards people living with HIV. On the other hand, 22.2% of health workers said they saw or heard of no discriminating behaviour at all. The differences between the entities and Brčko District were statistically different ($p=0.034$), (Part III, Table 63).

Most common answers indicating health workers' discrimination towards people living with HIV were: additional precautions measures were taken for sterilizing instruments used for treating patients living with HIV (65.2%), latex gloves were used for a non-invasive examination of a patient

suspected of being diagnosed with HIV (42.9%), a medical worker revealed the patients' HIV status (24.7%), (Graph 29), (Part III, Table 50-54).

Graph 29. *Percentage of health workers who witnessed or heard of discriminating behaviour towards people living with HIV*



After analyzing the mean values of the five-question scale, no statistically significant difference was found in the answers of health workers of different professions ($p=0.054$), (Part IV, Table 73).



7. DISCUSSION ABOUT THE STUDY RESULTS

7.1. Health workers' knowledge about HIV/AIDS

Knowledge is the starting point for forming attitudes and behaviour. It is a necessary but not sufficient condition for acceptable behaviour in health care.

Health workers' knowledge about the ways and means of HIV/AIDS transmission is one of the most important conditions for the proper evaluation of the degree of professional risk of infection and adequate preventative measures application.

In this study, health workers' knowledge about HIV/AIDS was evaluated based on a set of questions about the way HIV infection is transmitted and other questions referring to HIV/AIDS. Only 17.1% of the interviewees know by which body fluids HIV infection can be transmitted, which is a low level of knowledge for health professionals, but they showed good knowledge about blood and semen, whereas bad for saliva, mother's milk, sweat and tears.

It was determined that health workers from Republic of Srpska and Brčko District - medical doctors know more about the ways HIV infection is transmitted, the workers who had any kind of HIV education, those who work in surgeries/on wards or those who perform surgical interventions. The interviewees from the tertiary level of health care, dental and laboratory technicians and elderly interviewees showed less knowledge.

Most interviewees know that a person's appearance can be misleading in HIV infection (92.3%) and that one unprotected sexual intercourse can lead to HIV infection (94.1%), and 80.0% know that a person can live more than ten years without having HIV/AIDS symptoms. Slightly more interviewees know that a HIV infection can be detected with certainty 6 to 8 weeks after being infected, and 60.0% of them believe that the standard sterilization procedures are enough to sterilize the instruments used for treating patients living with HIV.

Slightly less than a half of the interviewees believe that Elisa test is reliable for detecting specific anti-bodies and more than one third know of the Western blot test.

Slightly more than one half of the interviewees know that HIV is not transmitted by a mosquito bite, while more than one third don't know that pregnant women infected with HIV will not get babies who contracted AIDS.

7.2. Health workers' behaviour in the workplace in the context of HIV prevention

Study results showed that more than a half of the interviewed health workers every day performed interventions in which they have contacts with blood or other body fluids, every tenth interviewee delivers babies, fills in or extracts teeth, and almost every fourth health worker performs other intervention in which he/she has contacts with blood or other body fluids.

Accidental injuries of health workers often occur and they increase the risk of HIV infection. Health workers in BiH most often have contact with patients' blood, via damaged skin (35.1%), the prick of a needle (30.6%), patient's blood spraying into eyes or onto other mucous membrane recorded in (26.1%), and injuries caused by sharp objects (24.1%)

Using preventative measures with the aim of preventing HIV infection differs among health workers. The study showed that dentists (8.1%) use protective equipment in everyday work with

patients to a great extent, whereas 44.3% of laboratory technicians don't use any preventative measure.

Percentage of workers who apply all the measures is almost neglectful (0.98%). On average, health workers apply 1.2 measures out of 4 tested. A similar percentage of health workers apply no measure or one or two measures (about 30%). Interviewees wear protective mask or glasses most rarely.

Knowledge about applying basic measures for HIV infection prevention in the workplace is different among health workers' professions. Dentists, female interviewees, and those with any kind of education know of the measures for HIV prevention in the workplace more often and to a greater extent. Adversely, employees from blood transfusion centres and laboratory technicians know considerably less about the measures for HIV infection prevention in the workplace.

Slightly less than two thirds of health workers apply extensive preventative measures while working with people living with HIV.

It is known that the average risk of HIV infection by being in contact with infected blood after the prick of a needle or from a cut is 0.3% (1:300). The risk when infected blood gets into one's eyes, nose or mouth is on average 0.1% (1:100), while the risk of exposing unharmed skin to HIV-infected blood is lower than 0.1%. No cases of HIV transmission were recorded when unharmed skin was in contact with a small amount of blood (a few drops of blood on skin during a short period).

Taking into account the above-mentioned facts, above all the fact that HIV infection protection doesn't differ from the universal preventative measures applied for other blood-transmitted infections, we could conclude that health workers in BiH overestimate the risk of HIV infection.

7.3. Attitudes of health workers towards people living with HIV

Stigma and discrimination in health institutions have different causes. Apart from health workers' lack of knowledge about the ways of transmitting and risks of HIV infection, they are encouraged by condemnation attitudes and prejudices about the sexual life of people living with HIV.

There is one more form of stigma and discrimination, and that is the moral or value-based stigma. This kind of stigma is characterized by making assumptions and expressing condemnation about the way people contract HIV in advance, with the ultimate consequence – stigmatizing attitudes towards people living with HIV. Numerous studies confirm that at least three key dimensions are important for measuring value-based stigma: shame, guilt and condemnation. Health workers are members of the community in which they work, so their attitudes reflect the prevailing stigma existing in the society, especially to marginalized groups, for example sexual workers.

The term discrimination or implemented stigma is used to include a wide group of activities connected with discrimination. The more extensive term used here involves important stigmatizing activities which are usually not connected with the term discrimination, such as gossip, as a social and physical isolation of the people living with HIV.

Discrimination often implies illegal acts of isolation or harassment which occur in formal institutional environment.

This study conducted among health workers also had the aim to evaluate the presence of different forms of stigma and discrimination among health workers in BiH.

The attitudes of health workers towards people living with HIV were observed in relation to stigma elements: irrational fear, condemnation, guilt, discrimination and shame. The results showed that the previous education about HIV/AIDS was proportional to health workers' attitudes. So health workers who had no education know less about the basic measures for HIV infection prevention in the workplace and about the way HIV infection is transmitted, and they show the greatest fear of giving an injection to a person living with HIV. Among health workers, dental nurses/technicians who had no HIV/AIDS education, are most afraid to give an injection to a person living with HIV.

The degree of **condemnation, as a significant indicator of health workers' stigma** towards people living with HIV was measured by applying a 12-degree scale. According to the obtained results, almost all health workers (99.5%) express condemnation of people living with HIV in some way. Health workers who express condemnation of people living with HIV in any way, received less HIV/AIDS education, know less about the basic measures for preventing HIV infection in the workplace, as well as the ways of transmitting HIV infection and are afraid to give an injection to a person living with HIV.

More than three quarters (83.0%) of health workers in BiH believe that women living with HIV shouldn't get pregnant. However, literature shows that without interventions, between 20 and 45% of newborns can get infected, with the estimated risk 5-10% during pregnancy, 10-20% during labour and 5-20% during breast-feeding. The total risk can be diminished to less than 2% by applying procedures based on evidence.

Medical doctors, health workers who had any kind of HIV/AIDS education, health workers in primary health care, people employed in blood transfusion centres and hospitals. express condemnation of people living with HIV more rarely or never.

One quarter of health workers in BiH **do not think that a patient's HIV status should be kept secret** (25.5%), plus additional 16.2% who were not sure. According to the professions, the differences are not statistically important.

Health workers who don't think that a patient's HIV status should be kept secret express condemnation of people living with HIV more often. These workers apply basic measures for preventing infection in the workplace more often, are not afraid to give an injection to a person living with HIV, and they have not heard of or witnessed any discriminating behaviour towards people living with HIV.

Although the patient's right to information secrecy is guaranteed by Law on patient's rights, obligations and responsibilities, some health workers have a different opinion about the patients living with HIV.

UNAIDS and WHO encourage favourable disclosure. Disclosure which is voluntary, respects the autonomy and the dignity of an infected person, supports confidentiality, is useful to a person and his/her family, his/her sexual and injection partners, leads to initializing questions about HIV/AIDS in the community, and achieving ethical imperatives in order to help both uninfected and infected people.

Multiple logistic regressive model was applied to evaluate the connection between several different factors and the likelihood that health workers will answer that they have witnessed or heard of discriminating behaviour towards the patients living with HIV. Those who have heard of discriminating behaviour towards a patient living with HIV are health workers from transfusion centers, dental technicians, health workers who perform surgical intervention and those with a

longer working age. Contrary to that, those who haven't heard of such behaviour are medical doctors and interviewees from Republic of Srpska.

In social environments with low HIV prevalence like BiH, it is likely that most interviewees don't know anybody living with HIV in person, so the question whether health workers heard of a case when somebody experienced a specific form of stigma was added. Dental technicians, health workers who got HIV/AIDS education, health workers who perform surgical interventions and those with a longer working age, heard of discriminating behaviour most often.

For the first time, this study enabled obtaining valuable data indicating the presence of stigma and discrimination of people living with HIV among health workers in BiH. Although studies like this provide important information, there are also certain limitations. Although the participation rate in the study was high (92.0%), a certain number of health workers didn't answer all the questions.

8. CONCLUSION

The study showed that health workers' knowledge about the means and ways HIV is transmitted and other facts concerning HIV/AIDS is not on the acceptable level, and that generally there are not statistically significant differences between both entities and Brčko District:

- Only 17.1% of the interviewees know of all the ways of transmitting HIV infection when body fluids are concerned, and the answer is similar between both entities and Brčko District. Medical doctors showed the highest level of knowledge, dental technicians showed the lowest.
- 52.2% of the interviewees knew that HIV can't be transmitted by a mosquito bite, slightly more in FBiH than in Republic of Srpska and Brčko District.
- 60.0% of the interviewees believes that standard sterilization procedures are sufficient to sterilize instruments used for treating people living with HIV.
- 92.3% of the interviewees know that a person who looks healthy can transmit HIV.
- 36.7% of the interviewees didn't know that all pregnant women infected with HIV won't have babies who contracted AIDS
- 44.6% of the interviewees believes that Elisa test is a reliable test for detecting specific antibodies in HIV infections, and 36.7% know it is Western blot test.
- 52% of the interviewees know that HIV infection can certainly be detected 6 to 8 weeks after being infected.
- 81.5% of the interviewees know that a person infected with HIV can live more than 10 years without AIDS symptoms.
- Almost all the interviewees (94.1%) knew that one unprotected sexual intercourse can lead to HIV infection.
- 60.2% of the interviewees know that HIV infection can't be transmitted by sharing the same cutlery with a person living with HIV.

The results of the study indicate an insufficient level of knowledge and application of preventative measures at work in the context of HIV prevention:

- The situations with the highest risk for health workers when working with a patient are the contacts with the patient's blood or other body fluids via damaged skin, the prick of a needle, blood spraying into eye or other mucous membrane.
- More than a half of health workers always wear gloves, while a third always wears masks. Only 3.9% of health workers always wear double gloves.
- Percentage of health workers who apply all infection prevention measures at work (on average 1.2 measures out of four tested) is almost neglectful. Approximately one third of health workers apply no measures at all, or one or two measures. Laboratory technicians apply them least often and dentists most often.
- More than a half of health workers don't dispose of medical waste together with other rubbish into rubbish bins and/or plastic bags. About a third of the interviewees always dispose of medical waste adequately, ie. into impenetrable containers.

- The proportion of health workers who know all the basic measures for preventing HIV infection in the workplace is low. Slightly less than a half workers know four out of five basic preventative measures, on average three basic measures. Level of knowledge also differs among health workers' professions. Three thirds of health workers apply more extensive preventative measures, when they know that a patient is a person living with HIV.
- Slightly more than a half of health workers have never been tested on HIV. Health workers' attitudes indicate a significant degree of stigma and discrimination of people living with HIV:
- 26.2% of the interviewees said they were afraid to give an injection to a patient living with HIV, with no difference among health workers' professions.
- 69.3% of the interviewees wouldn't feel uneasy to provide health service to a patient living with HIV, whereas 25% of the interviewees are not sure about that.
- Most of the interviewees said they didn't avoid touching clothes and things if the patients known to have or suspected of living with HIV, due to the fear they might get infected.
- Most of the interviewees (83.9%) said that people who are particularly exposed to risk (sexual workers, injection drug users, men having sex with men) deserve to get an equal level and quality of health care as other patients.
- Most of the interviewees (58.9%) believe that the most common way of getting HIV infection among health workers is in the workplace, 18.4% don't agree with that, 21.7% are not sure.
- 99.5% of health workers in BiH express some kind of condemnation of people living with HIV. These health workers received less HIV education, know less about the basic measures for preventing HIV infection in the workplace, as well as the ways of transmitting HIV infection, and they are afraid to give an injection to a person living with HIV.
- 21.2% of health workers in BiH expresses condemnation of people living with HIV, plus a quarter (26.7%) of those who are not sure about the answer.
- 25.5% of health workers in BiH don't think that a patient's HIV status should be kept secret, plus 16.2% of those who are not sure about their answer to this question. Health workers who don't think that a patient's HIV status should be kept secret express condemnation of people living with HIV more often.
- 78.0% of health workers witnessed or heard of any discriminating behaviour towards a patient living with HIV.
- Dentists (82.1%) and dental nurses/technicians (89.5%) witnessed or heard of any discriminating behaviour towards people living with HIV in their health institutions in the highest percentage, and medical doctors in the lowest percentage (66.1%).

9. PROPOSED MEASURES

'Universal precautionary measures', recommended by CDC (Center for Disease Control) should be fully complied with and applied for every patient, with every procedure and by all health workers. They consist of five standard actions:

- cautious use of sharp medical instruments and their safe depositing into containers with impenetrable walls,
- safe decontamination of instruments and other used equipment
- health workers' hands protection (including washing them),
- applying protective barriers to prevent direct contact with body fluids and
- safe removal and disposal of medical waste contaminated with body fluids.

The obligation of all health institutions would be to provide the following for health workers:

- available written instructions for general infection protection measures,
- instructions for applying measures of post-exposure prophylaxes,
- equipment for personal protection and to increase the safety of the technology used in work,
- Education related to the causes of the infections transmitted by blood.

Health workers' education should be the base of all further activities. It can be organized as occasional, periodical or continuous education, with the aim to provide relevant information and modern scientific achievements for health workers. Health workers, as well as other workers employed in the health sector, should be included in the education.

Planned and continuous education has to be directed to increasing the level of knowledge, changing negative attitudes and prejudices, as well as understanding the importance of applying recommended precautionary measures in everyday work, which will prevent injuries.

Proposed recommendations:

1. Create curriculums on the issue: Stigma and discrimination of people living with HIV.
2. Organize continuous education of health workers.
3. Make sure that health institutions provide the following for the health workers:
 - written instructions for general infection protection measures,
 - instructions for applying measures of post-exposure prophylaxes,
 - equipment for personal protection and increasing the safety of the technology used in work.



APPENDICES

Appendix 1: List of health institutions involved in the study

LIST OF PUBLIC HEALTH INSTITUTIONS INVOLVED IN THE STUDY

I. Republic of Srpska

1. Out-patient clinic Banja Luka
2. Out-patient clinic Srbac
3. Out-patient clinic Kozarska Dubica
4. Out-patient clinic Bijeljina
5. Out-patient clinic Doboj
6. Out-patient clinic Zvornik
7. Out-patient clinic Trebinje
8. Out-patient clinic Pale
9. General hospital Trebinje
10. General hospital Doboj
11. General hospital Foča
12. General hospital Kasindo
13. General hospital Trebinje
14. Clinical Centre Banja Luka
15. Institute for transfusion medicine of Republic of Srpska

II. Bosnia and Herzegovina Federation

1. Out-patient clinic Cazin, Unsko-sanski canton
2. Out-patient clinic with polyclinic Zavidovići, Zeničko-dobojski canton
3. Out-patient clinic Bugojno, Srednje-bosanski canton
4. Out-patient clinic Ljubuški, Hercegovačko-neretvanski canton
5. Out-patient clinic Centar, Canton Sarajevo
6. Out-patient clinic Novo Sarajevo, Canton Sarajevo
7. Out-patient clinic Ilidža, Canton Sarajevo
8. General hospital 'Dr Fra Mato Nikolić', Nova Bila, Srednje-bosanski canton
9. General hospital Konjic, Hercegovačko-neretvanski canton
10. General hospital 'Prim. Dr Abdulah Nakaš', Canton Sarajevo
11. Cantonal hospital Bihać „Dr Irfan Ljubijankić“, Unsko-sanski canton

12. Cantonal hospital Zenica, Zeničko-dobojski canton
13. Clinical hospital Mostar, Hercegovačko-neretvanski canton
14. Clinical centre Sarajevo, Canton Sarajevo
15. University-clinical centre Tuzla, Tuzlanski canton
16. *RMC 'Dr Safet Mujić'* Mostar, Hercegovačko-neretvanski canton
17. Institute for emergency Medical Treatment Canton Sarajevo
18. Institute for alcoholism i other toxicomanias Canton Sarajevo
19. Transfusiology Institute Federacije BiH

III. District Brčko

1. Health centre 1
2. Health centre 2
3. Health centre 3
4. General hospital Brčko

Appendix 2: Questionnaire**SECTION I****Please check the statements below that you agree with:**

1	Have you had any HIV education so far? (if the answer is NO please go to question number 3)	Yes <input type="checkbox"/> No <input type="checkbox"/>
2	Do you think the knowledge you got during the education was useful in practical work?	Yes, it was <input type="checkbox"/> Somewhat <input type="checkbox"/> No, it wasn't <input type="checkbox"/>
3	How much do health workers generally know about HIV/AIDS?	A little <input type="checkbox"/> Somewhat <input type="checkbox"/> Nothing <input type="checkbox"/>

Section II**Please check the statements below that you agree with:**

4	Do you perform interventions in which you are in contact with patient's blood or other body fluids?	Operation	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Giving injections	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Giving infusions	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Bandaging up wounds	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Delivery	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Filling in / Extracting teeth	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Other: _____	Yes <input type="checkbox"/>	No <input type="checkbox"/>
5	Has this happened to you in the previous 12 months while working with a patient to?	Pricking yourself with a needle	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Hurting yourself with a sharp object	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Being in contact with patient's blood via damaged skin	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Patient's blood sprayed into your eye or other mucous membrane	Yes <input type="checkbox"/>	No <input type="checkbox"/>

6	During interventions where a contact with patient's blood or his/her body fluids is possible do you wear	Gloves	Never <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Always <input type="checkbox"/>
		Double gloves	Never <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Always <input type="checkbox"/>
		Mask	Never <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Always <input type="checkbox"/>
		Protective glasses	Never <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Always <input type="checkbox"/>
7	You dispose medical waste (used syringes, needles, infusion systems, cannulas etc.)	With other rubbish into rubbish bins and/or plastic bags	Never <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Always <input type="checkbox"/>
		Into rubbish bins and/or plastic bags separated from other rubbish	Never <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Always <input type="checkbox"/>
		Into special containers with hard walls (impenetrable containers)	Never <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Always <input type="checkbox"/>
8	Basic measures for preventing HIV infection in the workplace are:	Wearing gloves	Never <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Always <input type="checkbox"/>
		Wearing protective glasses and masks	Never <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Always <input type="checkbox"/>
		Caution in all activities with patients and their medical materials	Never <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Always <input type="checkbox"/>
		Compulsory testing of all patients before a surgical intervention	Never <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Always <input type="checkbox"/>
		Knowing and applying standard precautionary measures for preventing infection	Never <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Always <input type="checkbox"/>
9	If you know that a patient is HIV positive do you apply more extensive preventative measures?	Yes <input type="checkbox"/> No <input type="checkbox"/> Never had a patient like that <input type="checkbox"/>			
10	Have you ever been tested on HIV?	Yes <input type="checkbox"/> No <input type="checkbox"/> Don't want to answer <input type="checkbox"/>			

SECTION III***Please check the statements below that you agree with:***

11	Which of the following body fluids can contain a concentration of HIV high enough to transmit the virus?	Semen	Yes <input type="checkbox"/>	Don't know <input type="checkbox"/>	No <input type="checkbox"/>
		Blood	Yes <input type="checkbox"/>	Don't know <input type="checkbox"/>	No <input type="checkbox"/>
		Vaginal secretion	Yes <input type="checkbox"/>	Don't know <input type="checkbox"/>	No <input type="checkbox"/>
		Mother's milk	Yes <input type="checkbox"/>	Don't know <input type="checkbox"/>	No <input type="checkbox"/>
		Other body fluids which contain blood	Yes <input type="checkbox"/>	Don't know <input type="checkbox"/>	No <input type="checkbox"/>
		Saliva	Yes <input type="checkbox"/>	Don't know <input type="checkbox"/>	No <input type="checkbox"/>
		Sweat	Yes <input type="checkbox"/>	Don't know <input type="checkbox"/>	No <input type="checkbox"/>
12	Can people be infected by a mosquito bite?	Tears	Yes <input type="checkbox"/>	Don't know <input type="checkbox"/>	No <input type="checkbox"/>
13	Standard procedures of sterilization are sufficient for sterilizing instruments used for treating people with HIV.		Yes <input type="checkbox"/>	Don't know <input type="checkbox"/>	No <input type="checkbox"/>
14	Is it possible that a person who looks healthy can transmit the virus?		Yes <input type="checkbox"/>	Don't know <input type="checkbox"/>	No <input type="checkbox"/>
15	All pregnant women who are infected with HIV will have babies who contracted AIDS		Yes <input type="checkbox"/>	Don't know <input type="checkbox"/>	No <input type="checkbox"/>
16	Safe diagnosis of HIV infection is achieved by detecting specific anti-bodies:	Elisa test	Yes <input type="checkbox"/>	Don't know <input type="checkbox"/>	No <input type="checkbox"/>
		Western blot test	Yes <input type="checkbox"/>	Don't know <input type="checkbox"/>	No <input type="checkbox"/>
17	HIV infection can be detected with certainty 6-8 weeks after being infected		Yes <input type="checkbox"/>	Don't know <input type="checkbox"/>	No <input type="checkbox"/>
18	A person can be infected with HIV more than 10 years without having AIDS symptoms		Yes <input type="checkbox"/>	Don't know <input type="checkbox"/>	No <input type="checkbox"/>
19	Even a single unprotected sexual intercourse can lead to HIV infection		Yes <input type="checkbox"/>	Don't know <input type="checkbox"/>	No <input type="checkbox"/>
20	A person can be infected with HIV if he/she shares cutlery with a person living with HIV		Yes <input type="checkbox"/>	Don't know <input type="checkbox"/>	No <input type="checkbox"/>

SECTION IV

In the answer referring to the following situations, you are kindly asked to tell us if you are afraid of HIV infection, you are not sure whether you are afraid or you are not afraid of HIV infection

21	Are you afraid to give an injection to a person living with HIV or AIDS.	Yes <input type="checkbox"/>	Not sure <input type="checkbox"/>	No <input type="checkbox"/>
22	Are you afraid to touch the saliva of a person living with HIV or AIDS.	Yes <input type="checkbox"/>	Not sure <input type="checkbox"/>	No <input type="checkbox"/>
23	Are you afraid if your child attends the same school as a child living with HIV or AIDS.	Yes <input type="checkbox"/>	Not sure <input type="checkbox"/>	No <input type="checkbox"/>

SECTION V

Do you completely agree, you are not sure or you disagree with the following statements:

24	I wouldn't feel uneasy to give health care to a patient living with HIV or AIDS.	I agree <input type="checkbox"/>	Not sure <input type="checkbox"/>	I disagree <input type="checkbox"/>
25	I avoid touching the clothes and things of a patient known to have or suspected of having HIV, out of the fear I might get infected with HIV.	I agree <input type="checkbox"/>	Not sure <input type="checkbox"/>	I disagree <input type="checkbox"/>
26	People particularly exposed to risk (sexual workers, injection drug users, men having sex with men) deserve to have the same level and quality of health care as other patients.	I agree <input type="checkbox"/>	Not sure <input type="checkbox"/>	I disagree <input type="checkbox"/>
27	The most common way of getting HIV infection is in the workplace	I agree <input type="checkbox"/>	Not sure <input type="checkbox"/>	I disagree <input type="checkbox"/>

SECTION VI***Please express your attitudes referring to the following statements:***

28	Being infected with HIV or having AIDS in most infected people's fault	I agree <input type="checkbox"/>	Not sure <input type="checkbox"/>	I disagree <input type="checkbox"/>
29	Promiscuous people are the ones who spread HIV in our community.	I agree <input type="checkbox"/>	Not sure <input type="checkbox"/>	I disagree <input type="checkbox"/>
30	Intravenous drug users spread HIV infection.	I agree <input type="checkbox"/>	Not sure <input type="checkbox"/>	I disagree <input type="checkbox"/>
31	Health workers living with HIV shouldn't be allowed to work with patients.	I agree <input type="checkbox"/>	Not sure <input type="checkbox"/>	I disagree <input type="checkbox"/>
32	HIV positive status of a person living with HIV should be clearly marked on their medical record or case history	I agree <input type="checkbox"/>	Not sure <input type="checkbox"/>	I disagree <input type="checkbox"/>
33	If you find out that your colleague is HIV positive would you work with him/her?	I agree <input type="checkbox"/>	Not sure <input type="checkbox"/>	I disagree <input type="checkbox"/>
34	Women living with HIV shouldn't get pregnant	I agree <input type="checkbox"/>	Not sure <input type="checkbox"/>	I disagree <input type="checkbox"/>
35	Patients should be tested on HIV without their consent before an operation or other intervention.	I agree <input type="checkbox"/>	Not sure <input type="checkbox"/>	I disagree <input type="checkbox"/>
36	I would feel ashamed if a member of my family were diagnosed with HIV	I agree <input type="checkbox"/>	Not sure <input type="checkbox"/>	I disagree <input type="checkbox"/>
37	I would share cutlery and food with a person living with HIV	I agree <input type="checkbox"/>	Not sure <input type="checkbox"/>	I disagree <input type="checkbox"/>
38	A person living with HIV has the right to decide by himself/herself who should know about it	I agree <input type="checkbox"/>	Not sure <input type="checkbox"/>	I disagree <input type="checkbox"/>
39	People living with HIV should bear the costs for gloves, masks and other medical material needed for HIV infection protection	I agree <input type="checkbox"/>	Not sure <input type="checkbox"/>	I disagree <input type="checkbox"/>

SECTION VII***Have you seen or heard that the following situations took place in your health institution:***

40	Patient living with HIV received less care/attention than other patients.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
41	Additional precautionary measures were taken for sterilizing instruments used for treating patients living with HIV.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
42	Health worker unnecessarily referred a patient to another doctor because the patient is a person living with HIV.	Yes <input type="checkbox"/>	No <input type="checkbox"/>

43	Latex gloves were used for non-invasive examinations of patients suspected of having HIV.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
44	Health worker revealed a patient's HIV status.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
45	If you know of or you have witnessed that the above mentioned things happen to a patient because he/she is a person living with HIV, would you report that to the authorities?	Yes <input type="checkbox"/>	Don't know <input type="checkbox"/> No <input type="checkbox"/>

SECTION VIII

Please check the statements below that you agree with:

46	Have you had a patient living with HIV so far?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
47	Do you know of a health worker living with HIV or who has died of the disease consequences?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
48	Do you know of a protection policy towards people living with HIV?	Yes <input type="checkbox"/>	No <input type="checkbox"/>

SOCIO-DEMOGRAPHIC CHARACTERISTICS

49	How old are you?	[_ _]
50	Sex	Male <input type="checkbox"/> Female <input type="checkbox"/>
51	Job	PhD in medicine – specialist <input type="checkbox"/> Name specialisation: _____ Medical doctor <input type="checkbox"/> Dentist <input type="checkbox"/> Health care & and nursing graduate <input type="checkbox"/> Nurse/medical technician secondary school/two-year college <input type="checkbox"/> Dental nurse/technician <input type="checkbox"/> Laboratory technician <input type="checkbox"/> Other (please state) <input type="checkbox"/>
52	Your activities in the workplace refer to	Work with patient in a surgery/ward <input type="checkbox"/> Work in the operation theatre and/or emergency room <input type="checkbox"/> Work in a laboratory <input type="checkbox"/>
53	Ownership of the institution you work in?	Public health institution <input type="checkbox"/> Private health institution/practice <input type="checkbox"/>
54	Number of working age years in health care	[_ _] (write 00 if less than a year)

THANK YOU FOR YOUR TIME AND COOPERATION

Appendix 3: Statistical results analysis

(located on the CD - please see the back cover page)



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