Acceptance and uptake of voluntary HIV testing among healthcare workers in a South African public hospital

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Keywords: voluntary HIV testing, acceptance, uptake, public hospital, healthcare workers

Abstract

Background: Healthcare workers are seen as being at the centre of human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS) management. They are also at risk of HIV infection from occupational exposure to blood-borne pathogens during their daily work activities. Although many studies on HIV/AIDS and its management have been carried out globally, only a few address HIV counselling and testing among healthcare workers. The aim of this study is to determine factors associated with the acceptance and uptake of voluntary HIV testing among healthcare workers in a public hospital in KwaZulu-Natal.

Method: A cross-sectional quantitative descriptive survey was conducted among healthcare workers in a public hospital, by means of self-administered questionnaires. Written informed consent was obtained from each participant prior to participation in the study.

Results: A response rate of 239 (59.4%) was achieved from a targeted population of 402 healthcare workers. Of the 239 participants, 208 (87.0%) indicated that they would accept having an HIV test, while 217 (90.7%) reported having had HIV counselling and testing. There were positive associations between participants' having had HIV counselling and testing and having a close relative living with HIV/AIDS (p-value = 0.032), previous accidental exposure to blood-borne pathogens (p-value = 0.003) and the number of years of their work experience (p-value = 0.0006). No significant associations were noted between participants who reported having undergone HIV counselling and testing in the previous year, and their demographic variables, such as age (0.766), gender (0.876), marital status (0.715), and knowledge of hospital policy on post-exposure prophylaxis (0.5669).

Conclusion: The findings of this study showed high levels of acceptance (208, 87.0%) and uptake (217, 90.7%) of HIV counselling and testing among healthcare workers in the designated public hospital. Several factors influenced this.

Ⓟ **Peer reviewed. (Submitted: 2010-10-26. Accepted: 2011-02-22.)** **S Afr Fam Pract 2011;53(5):488-494**

Introduction

The HIV pandemic remains a most serious challenge for public health professionals.[1] Furthermore, statistical figures (2007) from the World Health Organization (WHO) and United Nations Programme on HIV/AIDS (UNAIDS) on HIV/AIDS reveal that sub-Saharan Africa is worst hit by this pandemic. Of the 33.2 million people living with HIV in 2007, 22.5 million of them lived in sub-Saharan Africa.[2] HIV counselling and testing is a prerequisite and gateway to all known interventions aimed at reducing the spread of HIV infection. Evidence is growing that it can result in behavioural change and improve the coping strategies of people living with HIV/AIDS.[3] Healthcare workers are at the front lines of the HIV epidemic, and they face the risk of HIV infection in both their personal and professional lives.[4] In South Africa, it is estimated that 16% of healthcare workers were infected with HIV in 2002.[5]

Although many studies related to HIV/AIDS and its management have been carried out worldwide, only a few address HIV counselling and testing among healthcare workers who are at the centre of HIV/AIDS management.[6] In order to access HIV counselling and testing and treatment, healthcare workers are faced with many challenges. These include, among others, fear of a positive result and of the stigma attached to HIV/AIDS, as well as lack of confidentiality regarding their HIV/AIDS status. Additional identified barriers include healthcare workers' personal relationships with those conducting the testing, and their perception that, as healthcare workers, they need to be portrayed as "role models". This can exacerbate fears about confidentiality. There is a great need to develop solutions to help healthcare workers overcome barriers to HIV counselling and testing, given the critical role that they play in HIV prevention, care and treatment.[4]

HIV counselling and testing is a key component of both HIV care and HIV prevention, but uptake is currently low.[7] The aim of this study was to determine the factors associated with the acceptance and uptake of HIV counselling and testing among healthcare workers in a public hospital in KwaZulu-Natal.

Healthcare workers are at the centre of HIV/AIDS management, and their willingness to undergo voluntary HIV testing determines their motivation and influence in recommending and promoting such testing to their clients and to the public at large. This will ultimately have an impact on HIV/AIDS intervention strategies as per the National Strategic Plan of the Department of Health, 2007-2011.[8] Healthcare workers are at risk of HIV infection from occupational exposure to blood-borne pathogens during their daily work activities. Furthermore, the public expects them to be role models in healthcare seeking behaviour, and this includes their willingness to undergoing HIV counselling and testing.[9]

High-impact voluntary counselling and testing strategies are urgently needed to maximise HIV prevention and access to care in Africa. Voluntary counselling and testing at the workplace has the potential for high uptake when offered on-site, and when linked to basic HIV care. Convenience and accessibility play critical roles in the acceptability of community-based voluntary counselling and testing.[7]

Method

A cross-sectional quantitative descriptive survey was conducted among healthcare workers in a public hospital in KwaZulu-Natal. In order to reduce the risk of selection and information biases, healthcare workers of various professional backgrounds and categories were recruited for inclusion in this study. A self-administered questionnaire was used to collect data, after obtaining written informed consent from each participant. Data were collected on various factors. These included socio-demographic characteristics and factors associated with acceptance of having HIV counselling and testing as reported by participants. These included personal, institutional and professional factors. Data were analysed using the SPSS 11.5 version, and frequencies and proportions were computed for categorical data. The Pearson's chi-square test was used to determine associations between categorical variables. The odds ratios were also determined, to quantify the associations with 95% confidence intervals.

Ethics approval was obtained from the Medunsa research and ethics committee (ethics clearance number: MCREC/PH/43/2008), and from the senior management of the study site, and research committees of the provincial Department of Health in KwaZulu-Natal. Ethical principles of autonomy, justice and confidentiality, as stipulated in the ethical guidelines of the Medical Research Council, were upheld throughout the study.[10] Anonymity of responses was maintained by asking participants not to disclose their personal details on the questionnaires.

Results

Four hundred and two questionnaires were distributed to eligible participants, but only 239 health care workers consented to participate in the survey; a response rate of 59.4%.

Demographic characteristics of participants

The socio-demographic characteristics of participants are tabulated in Table I. Of the 239 (59.40%) healthcare workers who participated in this survey, 174 (72.78%) were females and 64 (26.78%) were males, and the majority (70.29%) were black. Most participants (96, 40.1%) were 15-29 years old, followed by those aged 30-39 years (83, 34.72%). Slightly more participants (111, 46.44%) were married or living together with their partners, compared to others (104, 43.51%), who reported being single. The majority of the participants (208, 87.03%) were Christians.

Table I: Distribution of participants' socio-demographic characteristics

Variable	n	%
Gender		
Females	174	72.80
Males	64	26.78
Missing	1	0.42
Total	**239**	**100**
Race		
Black	168	70.29
Coloured	7	2.93
Indian	24	10.04
White	31	12.97
No response	9	3.76
Total	**239**	**100**
Age group		
15-29 years	96	40.67
30-39 years	83	34.72
> 40 years	60	25.10
Total	**239**	**100**
Marital status		
Divorced/separated	15	6.28
Married/living together	111	46.44
Single/no relationship	104	43.51
Widowed	3	1.26
No response	1	0.42
Staying together	5	2.09
Total	**239**	**100**
Religion		
Christianity	208	87.03
Hinduism	16	6.69
Islam	7	2.93
No response	2	0.84
Traditional	3	1.26
Other	1	0.42
Total	**239**	**100**

Table II shows the distribution of participants' professional backgrounds. The highest proportion (62.76%) was nurses, followed by medical doctors (20.92%). Only 16.32% were from other health professions, which included radiographers, physiotherapists and laboratory technicians. Pharmacists did not participate in this study, even though they were recruited to do so.

Table II: Distribution of participants by profession

Variable	n	%
Nurses	150	62.76
Medical doctors	50	20.92
Other health professionals	39	16.32
Total	**239**	**100.0**

The majority of participants had one to five years of work experience, with the highest proportion among other health professionals (58.90%), followed by nurses (47.60%). See Figure 1.

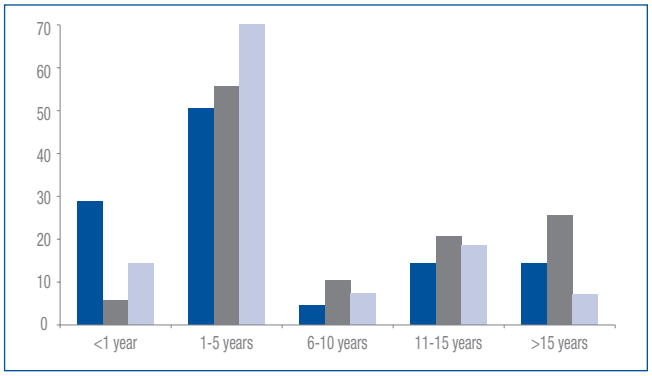

Figure 1: Distribution of participants' profession and years of work experience

Voluntary counselling and testing acceptance

Participants were asked various questions regarding their acceptance of voluntary counselling and testing for HIV. The results are tabulated in Table III. The majority (208, 87.0%) reported a great need for healthcare workers to undergo HIV counselling and testing, compared to only 39 (16.30%) who stated the opposite. On the question of whether healthcare workers should receive pre- and post-test counselling prior to undergoing HIV counselling and testing, results showed that the majority (75.73%) thought that it was not necessary, compared to a minority (17.57%) who did not agree. On the question of whether healthcare workers should carry out self-testing for HIV counselling and testing, results showed that 117 (48.95%) disagreed or disapproved, compared to 99 (41.42%) who agreed. Participants who disagreed with self-testing indicated that healthcare workers should also be given pre- and post-test counselling. They cannot provide this for themselves if they perform self-testing for HIV.

Table III: Participants' responses to acceptance of HCT

Variable	n	%
As a healthcare worker, there is a need for me to go for HIV counselling and testing		
Agree	208	87.03
Disagree	3	1.26
No response	13	5.44
Unsure	15	6.28
Total	**239**	**100**
It is better for healthcare workers to carry out self-testing		
Agree	99	41.42
Disagree	117	48.95
No response	6	2.51
Unsure	17	7.11
Total	**239**	**99.99**
Healthcare workers should receive pre- and post-test counselling		
Agree	42	17.57
Disagree	181	75.73
No response	8	3.35
Unsure	8	3.35
Total	**239**	**100**

Uptake of human immunodeficiency virus testing

Participants who reported having been tested for human immunodeficiency virus

In order to determine the uptake of HIV testing among healthcare workers, the participants were asked if they had ever tested for HIV, and if so, their reasons for doing so. As illustrated in Table III, the majority (91.20%) indicated that they had tested for HIV, 139 (58.14%) of who reported to have tested in the previous year. Reasons given included a willingness to determine their HIV baseline status (74, 53.06%), concerns about the risk of becoming infected with HIV during hospital activities (45, 32.65%), and their knowledge of the HIV status of patients in their care (18, 13.27%). As can be seen in Table IV, 118 (49.37%) of the participants reported having undergone routine (annual) HIV testing, while 58 (24.26%) stated that they tested for HIV as a result of accidental exposure to blood-borne pathogens from needle-prick injuries. This is in compliance with the institution's standard operating procedure.

Only a few participants (16, 6.69%) reported not ever having been tested for HIV. According to Table IV, common reasons for this, as stated by many participants (50.0%), included fear of the results (if positive), followed by equal proportions of fear of the stigma associated with HIV testing (25.0%), and a belief that they were healthy, and therefore not in need of testing.

Factors associated with participants' acceptance and uptake of human immunodeficiency virus counselling and testing

Association between demographic profile and human immunodeficiency virus testing

The association between the socio-demographic characteristics of participants who reported to have tested for

Table IV: Participants who reported to have tested for HIV

Variable	Frequency n	Percentage %
Have you ever tested for HIV?		
Yes	218	91.20
No	16	6.69
No response	5	2.09
Total	**239**	**99.98**
When last did you have an HIV test?		
< 1 year ago	139	58.15
2-4 years ago	58	24.26
5-6 years ago	11	4.60
> 6 years ago	10	4.18
No response	5	2.09
N/A	16	6.69
Total	**239**	**99.97**
What were your reasons for HIV testing?		
Routine testing		
Following a needle-prick injury	118	49.37
Multiple intimate partners	58	24.26
Other reasons, but not provided	6	2.51
Other, including responses such as:	28	11.71
- Simply decided to have the test done	1	
- Not trusting a partner within a relationship	1	0.41 0.41
- Having had unprotected sex	1	0.41
Never tested	16	6.69
No response	10	4.18
Total	**239**	**99.95**
What were your reasons for not undergoing an HIV test?		
Fear of results	8	50.0
Fear of the stigma	4	25.0
I am healthy	4	25.0
Total	**16**	**100.0**

HIV previously were also assessed in order to establish the uptake of HIV counselling and testing among health care workers. There was no significant association between participants' ages and when they underwent HIV testing (p-value = 0.760). The uptake of HIV testing among female participants was slightly higher (93.6%), compared to the males (91.9%). However, this was not statistically significant (p-value = 0.876). Regarding the marital status of participants who reported to have tested for HIV (91.2%), there was no positive association (p-value = 0.715). A high proportion of married (93.6%) and single (92.1%) participants tested for HIV.

Results further revealed that even though a high percentage of participants with professional backgrounds had previously undergone HIV testing, there were no positive associations between the type of professional background (p-value = 0.262) or rank (p-value = 0.895 for medical doctors and 0.868 for nurses) and testing for HIV. See Table V.

Association between human immunodeficiency virus testing and work activities

Table VI shows that there was a significant association (p-value = 0.0033) between exposure to blood-borne pathogens and participants testing for HIV. Furthermore, the

Table V: Association between demographic characteristics and HIV testing

Variable	Total	Have you ever tested for HIV? (Yes %)	P-value
Age group			
15-29 years	96	91.8	
30-39 years	83	94.5	
≥ 40 years	60	93.8	0.760
Gender			
Female	171	93.6	
Male	62	91.9	
No response	6	100.0	0.876
Race			
Black	164	92.7	
Coloured	7	85.7	
Indian	24	100.0	
White	30	93.3	
Non-South African	8	87.5	
No response	1	100.0	0.714
Marital status			
Divorced or separated	14	100.0	
Married or living together	110	93.6	
Single or no relationship	101	92.1	
Widowed	3	100.0	
No response	1	100.0	
Other	5	80.0	0.715
Academic qualification			
Primary school	3	100.0	
Matric	93	90.3	
Diploma	61	96.7	
Degree	66	92.4	
Postgraduate	8	100.0	
No response	2	100.0	0.641
Professional category			
Medical doctor	49	98.0	
Nurse	147	93.0	
Other	38	90.0	0.262
Rank by profession (medical doctors)			
Chief medical officer	3	100.0	
Intern	18	94.0	
Medical officer	3	100.0	
Principal medical officer	9	100.0	
Senior medical officer	12	100.0	
Specialist	2	100.0	0.895
Rank by profession (nurses)			
Assistant nursing manager	3	100.0	
Chief professional nurse	8	88.0	
Enrolled nursing assistant	70	89.0	
Nursing operations manager	4	100.0	
Nursing manager	1	100.0	
Other	1	100.0	
Professional nurse	41	96.0	
Senior professional nurse	7	100.0	
Staff nurse	6	100.0	0.868
Religion			
Christianity	203	93.0	
Hinduism	16	100.0	
Islam	7	86.0	
Traditional	3	67.0	
Other	3	100.0	
No response	2	100.0	0.487

odds of testing for HIV following an exposure to blood-borne pathogens was 6.5 times higher than the odds of testing for HIV without any exposure to blood-borne pathogens (OR = 6.50, 95% CI:1.50-28.15).

A high proportion of participants with one to five years' work experience reported having undergone HIV testing in the previous year. There was a significant association between participants' number of years of work experience and having been tested for HIV less than a year ago (p-value = 0.006). However, other potential determinants were not statistically significantly associated with HIV testing in the past year. Table VI shows strong positive associations (p-value = 0.0033, and p-value = < 0001) between participants' HIV counselling and testing and exposure to blood-borne pathogens as a result of occupational accidents. The highest proportion of such accidents (87, 98.0%) was due to needle pricks.

Table VI: Association between HIV testing and work-related activities

Variable	Total	Have you ever tested for HIV? (Yes %)	P-value
Years of work experience			
< 1 year	22	10.09	
1-5 years	107	49.08	
6-10 years	36	7.30	
11-15 years	16	16.60	[a]0.0006
≥ 15 years	37	16.90	
Have you ever had an accidental exposure to blood-borne pathogens?			
No	114	88.60	[a]0.0033
Yes	114	98.25	
Which of these occupational accidents have you had in the past?			
Blood splash into eyes	17	100.00	
Needle-prick injury	87	97.70	
Other	9	100.00	0.7377
Did you undergo HIV testing after this exposure?			
No	11	81.82	
Yes	101	100.00	[a]< 0.0001
Are you familiar with the hospital policy on post-exposure prophylaxis?			
No	9	100.00	
Not sure	5	100.00	0.5669
Yes	199	92.46	

a = significant

Social factors related to participants' human immunodeficiency virus testing uptake

In further efforts to determine factors that influenced participants' acceptance and uptake of HIV counselling and testing, they were asked if they had relatives who were HIV positive. Almost half the participants (49.7%) reported having at least one family member who was living with HIV and AIDS. Participants reported that the HIV-positive status of their relatives strongly encouraged them to voluntarily undergo HIV testing. This was confirmed by a positive association (p-value = 0.032) between participants who had a relative living with HIV and AIDS and their taking an HIV test. However, there was no significant association between participants testing for HIV and their having to take care of an HIV-positive patient. See Table VII.

Table VII: Association between ever having been tested for HIV and social factors

Variable	Have you ever tested for human immunodeficiency virus (HIV)? (Yes/No)		P-value
	(n)	(%)	
Do you have any close relative living with HIV and AIDS?			
Yes	119	49.70	
No	108	45.10	
No response	12	5.02	[a]0.032
Total	**239**	**99.8**	
Have you ever taken care of a patient/client who is HIV positive?			
No or not applicable	26	10.80	
Yes	213	89.12	0.848
Total	**239**	**99.9**	
Have you ever disclosed to a patient or client that he or she is HIV positive?			
No	5	2.09	
Not applicable	151	63.17	
Yes	83	34.72	0.720
Total	**239**	**99.9**	

a = significant

Discussion

Participants' socio-demographics

The majority of the participants in this study were between the ages of 15-29 years, and there were more female than male participants. This agrees with findings from similar studies conducted among healthcare workers in South Africa and in Zambia.[6,11] This might relate to the fact that the perceived risk of HIV, and the benefit of HIV counselling and testing services, have a major influence on the attitude and uptake of HIV counselling and testing among young adults. Black participants constituted the highest proportion of healthcare workers who participated in the study. The majority of participants were married, and nearly all participants indicated that they were Christians. Regarding the distribution of participants according to their profession, the majority were nurses, half of whom were of lower rank, i.e. enrolled nursing assistants.

Almost all participants in this study (91%) reported having been tested for HIV. More than half of them stated that they were tested in the previous year. This is a strong indication that health professionals are generally more likely to have

undergone testing for HIV. Such findings are in line with other studies that reported a high level of HIV counselling and testing uptake among healthcare workers.[12,13] However, a study that was conducted among healthcare workers in Zambia found a low level of HIV counselling and testing uptake (33%) .[11,14]

Uptake of human immunodeficiency virus testing

Almost all the participants in this study reported having undergone HIV counselling and testing. Half of them indicated that routine testing was a major reason. A similar study, conducted in Malawi to explore the enablers and barriers to HIV counselling and testing and antiretroviral therapy for healthcare workers, showed that the majority reported having undergone HIV counselling and testing (76%), 74% of whom reported repeat testing.[15]

On the other hand, fear of HIV test results was the major reason stated by participants for not undergoing HIV testing. This is similar to what was found in a UK-based study, namely that fear of results and fear of colleagues' reactions were offered as reasons for not undergoing HIV testing.[16] Half of the participants in our study were more likely to undergo HIV counselling and testing routinely, than for any other reason. This is in disagreement with the results of a similar study conducted in the UK, which revealed that the most common reason for healthcare workers to consider HIV testing was to establish awareness of their HIV status.[16] The differences between the findings of these two studies could be attributed to the fact that in the UK, the prevalence rate of HIV is low compared to that in this study setting (South Africa). Further UK studies, conducted to determine which factors motivated workers to undergo voluntary counselling and testing, revealed that the most common reasons reported by participants were knowledge of status, for treatment purposes, and to inform family members.[16]

Factors associated with acceptance and uptake of human immunodeficiency virus counselling and testing

The results of this study showed a negative association (p-value = 0.760) between undergoing an HIV test in the previous year, and participants' age groups. Healthcare workers of different age groups were equally likely to undergo HIV testing. The majority of participants who indicated that they had tested for HIV were 15-29 years old, while the least tested age group was > 40 years. This is in contrast with the results of a similar study conducted in Ethiopia among various professional and community groups, which revealed the highest proportion of participants who voluntarily tested for HIV was in the age group 15-19 years, and the least testing was reported among those aged > 40 years.[3] Such findings could relate to the fact that younger people are involved in more sexually risky behaviours than adults, which necessitates that they go for HIV counselling and testing more regularly. However, further studies are required to determine the reason for this. The results of this study also showed a significant association (p-value = 0.0006) between undergoing HIV counselling and testing, and participants' number of years' work experience.

Results further showed that female participants were more likely to have tested for HIV compared to male participants, although this was not found to be statistically significant (p-value = 0.876). On the contrary, studies conducted in Zambia, Zimbabwe and Birmingham reported that acceptance of HIV testing was lower among women than men.[13,17,18] In other studies, gender was not found to be statistically associated with the acceptance of HIV counselling and testing.[19,20] The Zimbabwean study specifically reported that women were allegedly more worried about their HIV status and more fearful of HIV testing than men.[17] However, in this study, the results did not show any significant association between having been tested for HIV and participants' gender (p-value = 0.705). The justification for this could be the high level of HIV awareness among participants who were healthcare professionals, as evidenced by their high level of acceptance of HIV counselling and testing.

Two studies conducted in Ethiopia revealed that being a female and a Christian were associated with a willingness to accept HIV counselling and testing.[21,22] No significant association was found between testing for HIV and gender, religion, educational status, profession and rank. Yet another study in Ethiopia revealed no significant association between participants' level of education and their acceptance of HIV counselling and testing.[3]

Results of this study further showed that half of the participants indicated that routine testing was the major reason for their having undergone HIV testing. This is in agreement with results reported in a UK-based study of a similar nature.[16] The latter study revealed that needle-prick injury, knowledge of HIV status, and the level of risk associated with occupational exposure were the major reasons for HIV counselling and testing among healthcare workers.[16] Our findings, namely that fear of the HIV test results was the major reason stated by participants for not undergoing testing, are in agreement with the findings of this UK-based study, which reported fear of results and fear of colleagues' reactions as reasons for not doing so.[16]

Acceptance of human immunodeficiency virus testing

Our results also showed that an overwhelming 87% of the participants affirmed the importance of HIV counselling and testing among healthcare workers. Regarding self-testing for HIV by healthcare workers, the results showed that a small proportion (41%) of participants supported the idea, compared to almost half (49%) who did not approve of self-testing. Conversely, the results of a Minnesota study revealed that 82% of healthcare workers preferred anonymous testing for HIV.[23] Such a finding is supported by the results of a recent study carried out among healthcare workers in Kenya. Seventy-three per cent of participants indicated that they were agreeable to HIV self-testing.[14]

Our results also showed that half of the participants had a close relative who is HIV positive. This differs from results of a study carried out in Kenya among healthcare workers. There, about a third of healthcare workers had HIV-positive relatives.[14] This could be due to a higher prevalence rate of HIV in South Africa, compared to Kenya. Further exploration, of whether having an HIV-positive relative would impact on a healthcare worker's decision to undergo HIV counselling and testing, revealed that the overwhelming majority reported that it positively affected their decision to do so, and it was statistically significant (p-value = 0.032). Hence, it could be argued that having a relative who has HIV is an indication that a healthcare worker is likely to go for HIV testing more regularly than a healthcare worker without an HIV-positive relative.

Results showed a positive association (p-value = 0.006) between the participants' number of years of work experience, and having been tested for HIV in the previous year. The authors are of the view that people who have been employed for longer periods are more likely to have tested for HIV. None of the literature that was reviewed included work experience as a variable which could be used to argue or support the findings of the current study.

Work-related factors and HIV counselling and testing uptake

According to our results, half of the participants indicated that they had been exposed to an occupational injury, for example exposure to blood-borne pathogens from needle-prick injuries, and the majority stated that they went for HIV counselling and testing afterwards, mainly to determine their HIV baseline status. The study showed a significant association between having had accidental exposure to blood-borne pathogens and HIV testing (p-value = 0.0033). Those who had experienced accidental exposure were more likely to have attended an HIV counselling and testing centre for HIV screening than those who had not.

A similar Kenyan study showed that only 25% of the participants reported recent occupational exposure to blood-borne pathogens.[14] A Minnesota study also revealed that one of the main factors that contributed to healthcare workers seeking HIV counselling and testing was occupational exposure to blood-borne pathogens. Seventy-eight per cent of the study participants were tested for work-related risk exposures.[23]

Conclusion

The findings of this study, comprising 236 participants, showed high levels of acceptance (208, 87.0%) and uptake (217, 91.0%) of HIV counselling and testing among healthcare workers in a public hospital in KwaZulu-Natal. Several factors influenced the acceptance and uptake of voluntary counselling and testing among healthcare workers. Such factors include the period of work experience, having a close relative living with HIV/AIDS, and accidental exposure to blood-borne pathogens in the workplace. Overall, our study showed that routine testing was the main reason for HIV counselling and testing among healthcare workers in the targeted public hospital.

Conflicts of interest

None.

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