academicJournals

Vol. 8(10), pp. 136-149, November 2016
DOI: 10.5897/JAHR2016.0389
Article Number: 077C10A61423
ISSN 2141-2359

http://www.academicjournals.org/JAHR

Journal of AIDS and HIV Research

Full Length Research Paper

Healthcare providers' (HCPs) attitude towards older adults with HIV and AIDS in Botswana

Njoku Ola Ama[1]*, Sheila Shaibu[2] and Jacqueline Dennis Burnette[3]

[1]Department of Statistics, University of Botswana, Botswana.
[2]School of Nursing, Faculty of Health Sciences, University of Botswana, Botswana
[3]Columbia University School of Social Work, USA.

Received 11 August, 2016; Accepted 19 September, 2016

This study obtained the views of a random sample of 164 healthcare practitioners on their attitudes to older adults with HIV and AIDS. It shows that although the knowledge of protective measures to avoid HIV infection, mode of transmission and stigmatization are high among the healthcare providers (HCPs), yet the majority of them (76.2% of medical officers, 80.4% of nurses and 93.3% of others) are aware of discrimination against people living with HIV (PLHIV). Attitudes of HCPs to older adults with HIV with respect to quality of life, tolerance, education and training, support and treatment of PLHIV are positive, but they significantly differ on issues of blame and sexual attitude of the PLHIV. There is very little engagement between the HCPs and the older adults on their sexual characteristics which can be attributed to the low literacy of the PLHIV. The study recommends appropriate education and counselling, more awareness creation of HIV, its mode of infection, prevention and treatment among HCPs, to eliminate the fears associated with HIV and AIDS. Health facility policies and stringent laws against discrimination need to be put in place.

Key words: People living with HIV (PLHIV), healthcare providers, attitude, older adults, HIV, AIDS

INTRODUCTION

The older adults (50 years and above) represent an increasingly important but neglected emergent segment of the changing HIV and AIDS epidemic. To know and respond to the HIV and AIDS epidemic now requires concerted attention on older adults. The fact that some of the people at this age range acquired HIV infection before age 50 and some after age 50 have major implications for prevention (e.g., primary versus secondary; self versus partners) and treatment (e.g duration, adherence, response, co-morbidities, and drug toxicity). The increased number of people living with HIV (PLHIV) in this age group has been as a result of the advent of antiretroviral therapy (ART) and its expansion worldwide (Negin and Cumming, 2010). In sub-Saharan Africa, ART has already reduced mortality rates, with 320,000 (or 20%) fewer people dying of HIV-related causes in 2009 than in 2004 (UNAIDS Report on the Global AIDS Epidemic, 2010; Edward et al., 2012; Effros

*Corresponding author. E-mail: amano@mopipi.ub.bw or njoku52@gmail.com.

Table 1. Selected districts and HIV prevalence and incidence (2008 BAIS III).

District	Location	Prevalence	Incidence
Gaborone	Urban	17.1	3.16
Selibe Phikwe	Urban	26.5	4.66
Central Serowe	Rural	20.0	4.19
Kgatleng	Rural	15.8	2.62

Source: Statistics Botswana (2013).

et al., 2008).

Negin and Cumming (2010) have shown that approximately 1 in 8 HIV-infected adults and 1 in 10 patients receiving ART in sub-Saharan Africa are older than 50 years of age and these ratios are likely to increase many fold in the coming decades due to the success of ART. In the USA, the number of people aged 50 years who are HIV positive is also increasing (CDC, 2013). Therefore, it is important to effectively address the needs of aging HIV-infected populations. For this to be accomplished, it will require political will, strengthened health systems, a greater commitment of human resources, and improved clinical infrastructure and expertise (Edward et al., 2012).

The 2013 Botswana AIDS Impact Study (BAIS IV) preliminary report indicates that there are 287,611 older adults (50 years and over) (Statistics Botswana, 2013). Of those in the age group who tested for HIV and declared their results, 23.7% were HIV positive (25.5% of males, 21.5% of females) and this number is likely to increase as new entrants enter into this cohort as a result of use of ART. The main way of contraction of HIV is sexual activity (96.4% of them had sex in the past 12 months) (Statistics Botswana, 2013). PLHIV face negative attitudes that stem from discrimination and moral judgement (Clarke, 2006; Li et al., 2009; Mensah et al., 2008), leading to their being deprived of available services, including HIV testing and medical care (Aggleton, 2002; Chesney and Smith, 1999; Fortenberry et al., 2002; Lichtenstein, 2003). Negative attitudes can also affect PLHIV if they are present in health care professionals (Smith and Mathews, 2007), who are keys to implementing policies and guidelines on HIV care, treatment and support. Therefore, it is important that the health care professionals/providers have credible and accurate knowledge of the disease and correct attitude towards the people living with HIV and AIDS (PLWHA). Health care providers may also lack knowledge about HIV prevention among older adults and they have been observed, in many countries, to have discriminatory attitudes towards PLHIV (Bermingham and Kippax, 1998; Bharat et al., 2010; Davies et al., 2015; Oyeyemi et al., 2006; Sadoh et al., 2006). Knowledge of the attitudes of HCPs to PLHIV in Botswana is, therefore, desirable and needs to be investigated empirically as it will enhance implementation of policies to reduce HIV and AIDS infection and stigmatisation.

This paper, which is part of a larger study, explores HCPs' knowledge of HIV and AIDS in Botswana and their attitude towards HIV and PLHIV. The results, in this paper, are based on the attitude of health care providers providing primary medical care/nursing care (n=164) to older adults with HIV and AIDS.

METHODOLOGY

A survey design was used to collect data from 164 health care providers who were providing primary medical care/nursing care to PLHIV in four health districts, Gaborone and Selibe Phikwe (urban), Central Serowe and Kgatleng (rural). The districts were purposively selected because of (1) high HIV and AIDS incidence/prevalence, (2) to reflect the rural and urban status of the districts, and (3) to reflect areas having large hospital and multiple clinics (Table 1). Gaborone and Selibe Phikwe represent two of the seven cities/towns (they are also classified as health districts), while Central Serowe and Kgatleng are classified as urban village districts. There are a total of 1666 health facilities in Botswana, classified as Referral hospitals (3), District hospitals (14), Primary hospitals (17), Health clinics (287), Health posts (338), Mobile posts (844), Private hospitals (6), and Private medical clinics (167). Gaborone, the capital of Botswana, is home to one of the three referral hospitals, while Selibe Phikwe, Central Serowe and Kgatleng, all have District hospitals (Ministry of Health, 2008).

A sample of 241 healthcare providers was statistically determined using the Survey Systems (2012), sample size calculator, from a population of 6130 health care providers (Central Statistics Office (CSO), 2009) at 95% confidence interval and a margin of error, 6.2%. This sample size was rounded up to 250 to allow for replacement of those in the original sample who might decline to participate in the study and for increased power. The sample was allocated to the health professionals using proportional allocation to size, where the size represents the number of HCPs in each category (Table 2). The simple random sampling method was used in identifying individual HCPs from each district from a sampling frame obtained from Ministry of Health offices in each district.

At the end of the data collection, 215 HCPs responded to the study giving a response rate of 86%. This response rate is very much higher than that obtained by Sevick and Bradham (1997) (19.7%) and Härkönen (2004) (50%) in similar studies. Visser et al. (1996) demonstrated that surveys with low response rates are not necessarily low in validity.

Research assistants received a two-day training (didactic and role-play) from the researchers on administering informed consent and the questionnaire. The research assistants were male and female graduates from the Social Sciences and Business, who are experienced in survey administration. They administered the questionnaires on the HCPs after explaining the purpose of the study and obtaining signed consents on participation. For those who could not find time to sit with the research assistants for

Table 2. Sample allocation of health professionals.

Professional	Population Size	Sample size
Physicians	591	24
Health educators	533	22
Nurses	5006	204
Total	6130	250

interview, the questionnaires were self-administered. The HCPs agreed with the research assistants on when and where the completed questionnaires would be collected back. The HCPs were assured of the confidentiality of the information provided, especially as the questionnaires had no provision for names of respondents. Also, they were assured that the data will not be used for any other purpose other than those defined in the consent form.

The questionnaire addressed issues concerning (1) the HCPs knowledge of HIV and AIDS, on a number of issues which ranged from protective measures from infection, correct and incorrect transmission methods, stigmatization and discrimination, mandatory testing and disclosure and treatment of older adults to which they responded 'Yes' or 'No'; (2) how often they interacted with the HIV positive older adults on issues of safer sex, use of injection drugs, sexual satisfaction and abstinence, using a four-point Likert scale of 1 = none, 2= half the time, 3 = almost all the time and 4 = always; and (3) how strongly they agree or disagree with some statements about HIV and PLHIV, on a five-point Likert scale of 1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree. The reliability coefficient of this scale was 0.6, indicating moderate internal consistency among the items.

The study was approved by the Institutional Review Boards (IRB) of the University of Botswana, and the Botswana Ministry of Health Research and Ethics. Research boards at the different districts also approved the study before data were collected.

The results, in this paper, are based on the responses of those health care providers who indicated that they had provided primary medical care/nursing care to older adults with HIV and AIDS (n=164 out of the 215 health care providers). The data were analysed using descriptive (percentages, frequency tables) and inferential statistics (chi-square and t-statistics).

RESULTS

Table 3 shows the demographic and employment characteristics of the HCPs studied (n=164). The majority of the HCPs, 98 (59.8%), were female. Their ages ranged between 20 and 59 years with 70 (42.7%) of them within the age interval 30-39 years, 45 (27.4%) within 20-29 years, and 40 (24.4%) within the age brackets 40-49 years. The never married 67 (40.9%) and married 70 (42.7%) dominated the group. The majority of the HCPs were nurses 112 (68.3%); medical officers (21) constituted 12.8% of the study sample and the others (31) (Pharmacist, Social Worker, Counsellor, and Health Care Assistant) constituted 18.9%. A slim majority of the HCPs 78 (47.6%) had a diploma certificate, while 69 (42.1%) had university degrees.

HCP knowledge of HIV and AIDS

Table 4 shows the responses of the HCPs classified by their employment status. Overall, knowledge of HIV and AIDS is high although there are still over 10% of the HCPs that have poor knowledge.

Protective measures

Medical officers (95.2%), 88.3% of nurses and 96.8% of the others know that people cannot protect themselves from HIV infection by mere having good nutrition. The majority (85.7%) of medical officers, 96.4% of the nurses and 93.5% of the others indicated that people can protect themselves from infection with HIV by having one uninfected faithful sexual partner. Over 90% of the HCPs know that people can protect themselves from infection with HIV by using a condom correctly every time they have sex; people can protect themselves from infection with HIV by not sharing needles and syringes that have previously been used.

Mode of transmission:

Over 90% of the HCPs know that (i) HIV is an example of sexually transmitted disease, (ii) sexually transmitted diseases increase the probability of infection with HIV, and a pregnant woman infected with HIV can transmit the virus to her unborn child. Over 90% of the HCPs also disagree that (i) people can protect themselves from infection with HIV by avoiding mosquito bites; (ii) people can protect themselves from infection with HIV by not sharing a toilet seat with a person who has HIV.

Discrimination

The majority of the HCPs (76.2% of medical officers, 80.4% of nurses and 93.3% of others) know that there is discrimination against patients with HIV and AIDS, and a little over 50% have observed others refusing to care for an HIV and AIDS patient.

Mandatory HIV testing and disclosure

An overwhelming majority of HCPs disagreed that if someone has HIV and AIDS, the employer/co-workers should be told even if she/he does not give permission.

Table 3. Socio-demographic characteristics of healthcare providers (HCP).

Characteristics of HCP		Frequency	%
Sex of respondent	Male	66	40.2
	Female	98	59.8
Age of health care provider	20-29	45	27.4
	30-39	70	42.7
	40-49	40	24.4
	50-59	9	5.5
Marital status	Never married (Single)	67	40.9
	Married	70	42.7
	Cohabiting	22	13.4
	Divorced	3	1.8
	Widowed	2	1.2
Employment status	Medical doctor	21	12.8
	Nurse	112	68.3
	Pharmacist	6	3.7
	Hospital/Clinic matron	8	4.9
	Social worker	10	6.1
	Counsellor	2	1.2
	Health care assistant	5	3.0
Highest educational status	STD 7	1	0.6
	Diploma certificate	78	47.6
	Degree attempted	2	1.2
	University degree	69	42.1
	Professional certificate	14	8.5

However, 31.6% of medical officers and 31.1% of nurses believed that all prospective workers should submit to mandatory HIV and AIDS testing, while 36% of the medical officers and 29.4% of the nurses still believe that all prospective health care workers should submit to mandatory HIV and AIDS testing.

Stigmatization

An overwhelming majority of the HCPs did not agree that many of those who contract HIV and AIDS behave immorally and deserve to have the disease

Concerns of HCPs on treatment of PLHIV

Table 5 reveals that 68.8% of medical officers, 44.2% of nurses and 70% of others the HCPs were mostly worried about the low health literacy of the older adults. Other concerns were contamination of materials/facility, fear of virus spread and being contaminated, stigma to clinic and facility, and non-availability of materials needed to protect self/others. In addition, the results show that there are significant differences in the opinions of the medical officers, nurses and others ($p < 0.05$). There were no significant differences in the concerns of HCPs on the fear of being contaminated and fear of virus spread ($p > 0.05$).

Use of universal precautions by the HCP when treating the older adults

The results of the responses of the HCPs to the question of how often they practised universal precautions in the treatment of the PLHIV show that (71.2%) HCPs practised it always, while 23.3% practised it most of the time. Some of them (2.4%) practised it sometimes, rarely or never bothered to practise it, while 3.3% of them had no knowledge of this practise. Reasons given for not practising it included lack of materials (91.7%), it should be used in emergency situations (1.4%) and no need to practice the universal precautions all the time (12.5%). The top five universal precautionary measures used were wash/sterilize after (86%), carefulness (84%), use of

Table 4. Health care providers' knowledge of HIV and AIDS.

Health Care Providers' Knowledge of HIV and AIDS		Employment Status					
		Medical Officer		Nurse		Others	
		Number	%	Number	%	Number	%
		Protective measures					
People can protect themselves from infection with HIV by having good nutrition	Yes	1	4.8	13	11.7	1	3.2
	No	20	95.2	98	88.3	30	96.8
People can protect themselves from infection with HIV by having one uninfected faithful sexual partner	Yes	18	85.7	107	96.4	29	93.5
	No	3	14.3	4	3.6	2	6.5
People can protect themselves from infection with HIV by not sharing a toilet seat with a person who has HIV	Yes	1	4.8	5	4.7	1	3.2
	No	20	95.2	101	95.3	30	96.8
People can protect themselves from infection with HIV by using a condom correctly every time they have sex	Yes	19	90.5	100	89.3	29	93.5
	No	2	9.5	12	10.7	2	6.5
People can protect themselves from infection with HIV by not sharing a meal with a person who had HIV	Yes	1	4.8	11	9.8	2	6.5
	No	20	95.2	101	90.2	29	93.5
People can protect themselves from infection with HIV by avoiding mosquito bites	Yes	0	0	5	4.5	0	0
	No	20	100	106	95.5	31	100
People can protect themselves from infection with HIV by not sharing needles and syringes that have previously been used	Yes	21	100	106	94.6	31	100
	No	0	0	6	5.4	0	0
Mode of Transmission							
A pregnant woman infected with HIV can transmit the virus to her unborn child	Yes	20	95.2	102	91.1	31	100
	No	1	4.8	10	8.9	0	0
A woman with HIV can transmit the virus to her new born child through breastfeeding	Yes	18	85.7	98	90.7	28	93.3
	No	3	14.3	10	9.3	2	6.7
There are more than two types of HIV	Yes	15	75	93	84.5	26	83.9
	No	5	25	17	15.5	5	16.1
HIV is one example of a sexually transmitted disease	Yes	18	90	101	91.8	30	96.8
	No	2	10	9	8.2	1	3.2
Sexually transmitted diseases increase the probability of being infected with HIV	Yes	19	90.5	110	99.1	29	96.7
	No	2	9.5	1	0.9	1	3.3
Discrimination							
There is discrimination against patients with HIV and AIDS	Yes	16	76.2	86	80.4	28	93.3
	No	5	23.8	21	19.6	2	6.7
I have observed others refusing to care for an HIV and AIDS patient	Yes	11	55	51	47.2	24	80
	No	9	45	57	52.8	6	20
A health professional with HIV and AIDS should not be working in any area of the health profession that requires patient contact	Yes	1	5.3	11	10.1	1	3.3
	No	18	94.7	98	89.9	29	96.7

Table 4. Cont.

Stigmatization							
Many of those who contract HIV and AIDS behave immorally and deserve to have the disease	Yes	1	5.6	4	3.8	0	0
	No	17	94.4	101	96.2	28	100
Mandatory HIV testing and disclosure							
If someone has HIV and AIDS his employer/co-workers should be told even she/he does not give permission	Yes	1	5.3	7	6.4	2	6.7
	No	18	94.7	102	93.6	28	93.3
It is OK to test someone for HIV without their knowledge.	Yes	1	5.6	14	12.8	0	0
	No	17	94.4	95	87.2	30	100
All prospective workers should submit to mandatory HIV and AIDS testing	Yes	6	31.6	33	31.1	2	6.9
	No	13	68.4	73	68.9	27	93.1
All prospective health care workers should submit to mandatory HIV and AIDS testing	Yes	7	36.8	30	29.4	3	10.3
	No	12	63.2	72	70.6	26	89.7

Table 5. Concerns of HCP in treating older adults with HIV.

Attitude to treating PLHIV		**Employment status (%)**			**Chi square test**		
		Medical officer	**Nurse**	**Others**	**Chi square**	**d.f**	**Sig.**
Fear of becoming contaminated	Yes	17.6	20.5	16.7	0.18	2	0.914
	No	82.4	79.5	83.3			
Contamination of materials/facility/instruments	Yes	35.3	26.1	44.4	2.636	2	0.268
	No	64.7	73.9	55.6			
Don’t have the materials needed to treat HIV and AIDS	Yes	0	7.9	16.7	3.18	2	0.204
	No	100	92.1	83.3			
Fear of virus spread	Yes	22.2	29.7	34.8	0.767	2	0.681
	No	77.8	70.3	65.2			
Don’t know how to treat/counsel	Yes	0.0	7.8	25.0	7.721	2	0.021*
	No	100	92.2	75.0			
Personal/professional stigma by association with PLHIV	Yes	0.0	6.7	34.8	17	2	0.000**
	No	100	93.3	65.2			
Don’t have the materials needed to protect self/others	Yes	11.8	2.2	31.8	19.89	2	0.000**
	No	88.2	97.8	68.2			
Stigma to clinic/facility	Yes	17.6	22.7	44.0	5.395	2	0.067
	No	82.4	77.3	56.0			
Their health literacy is low	Yes	68.8	44.2	70.0	6.293	2	0.043*
	No	31.3	55.8	30.0			
No particular concerns	Yes	83.3	59.2	79.5	7.641	2	0.022*
	No	16.7	40.8	20.5			

*Significant at 5% level; **Significant at 1% level.

Table 6. Engagement between HCP and Older adults on sexual issues.

Engagement between HCPs and PLHIV		Employment Status						Chi-square test of association		
		Medical officer		Nurse		Others				
		Count	%	Count	%	Count	%	Chi-square	d.f	p-value
How often do you talk to them about safer sex?	None	1	4.8	9	8	4	12.9	19.04	6	0.004*
	Half of the time	4	19	38	33.9	7	22.6			
	Almost all the time	6	28.6	53	47.3	12	38.7			
	All the time	10	47.6	12	10.7	8	25.8			
How often do you ask them if they are using injection drugs?	None	4	19.0	37	33.0	14	45.2	12.71	6	0.048*
	Half of the time	6	28.6	42	37.5	9	29.0			
	Almost all the time	5	23.8	24	21.4	7	22.6			
	All the time	6	28.6	9	8.0	1	3.2			
How often do you ask them about sexual satisfaction?	None	10	47.6	42	37.5	20	64.5	22.69	6	0.001*
	Half of the time	2	9.5	38	33.9	9	29.0			
	Almost all the time	4	19	26	23.2	2	6.5			
	All the time	5	23.8	6	5.4	0	0			
If they indicate abstinence, how often do you ask for clarification (that is what they mean by the term)?	None	7	33.3	46	41.1	17	54.8	12.39	6	0.054
	Half of the time	8	38.1	32	28.6	10	32.3			
	Almost all the time	2	9.5	27	24.1	1	3.2			
	All the time	4	19	7	6.3	3	9.7			

different instruments and disposal of the instruments used (75%), extra gloves/protective gear (73%) and HIV status clearly marked on the chart or file (63%).

Engagement between HCP and PLHIV on their sexual characteristics

The responses of the HCPs on how often they interacted with the HIV positive older adults on issues of safer sex, use of injection drugs, sexual satisfaction and abstinence are shown in Table 6. The table shows that only 47.6% of the medical officers talked to the older adults about safer sex all the time, while 47.3% of the nurses and 38.7% of the others talked to them almost all the time. Only 28.6% of the medical officers asked them if they were using injection drugs all the time and half of the time, respectively; 37.5% of the nurses asked them only half the time and the majority of the others never asked them. A greater proportion of medical officers (47.6%), nurses (37.5%) and others (64.5%) never had any discussion with the older adults on their sexual satisfaction. A similar trend is observed with the issue of abstinence. The association between the employment status and responses on safer sex and sexual satisfaction are shown to be highly significant ($p < 0.01$).

A comparison of the column percentages to determine which employment status significantly differs is shown in Table 7. The column proportions test table assigns a letter key to each category of the column variables. For employment status, the category medical officer is assigned the letter A; nurse is assigned the letter B; and others are assigned the letter C. For each pair of columns, the column proportions are compared using a z-test. Three sets of column proportions tests are performed, one for each level of sexual characteristics status and Bonferroni adjustments are used to adjust the significance values. For each significant pair, the key of the smaller category is placed under the category with the larger proportion.

For the set of tests associated with all the time, the BC key appears in the A column. No other keys are reported in other columns. Thus, the proportion of medical officers who indicated that they speak to the older adults about safer sex all the time is significantly greater than those of the nurses and other healthcare providers who speak with older adults about safer sex all the time ($p < 0.025$). The proportions of HCP who are medical officers, nurses and others and who speak to the older adults about safer sex half of the time, most of the time or none of the time are not significantly different ($p > 0.05$).

For the tests associated with the response ‘all the time’ when the HCPs are asked if they do ask the older adults how often they use injection drugs, the BC key appear in

Table 7. Comparisons of column proportions of the HCP's responses on the sexual characteristics of older adults.

Sexual characteristics of older adults		Employment status		Others
		Medical officer	Nurse	
		(A)	(B)	(C)
How often do you talk to them about safer sex?	None	-	-	-
	Half of the time	-	-	-
	Almost all the time	-	-	-
	All the time	B C	-	-
How often do you ask them if they are using injection drugs?	None	-	-	A B
	Half of the time	-	-	-
	Almost all the time	-	-	-
	All the time	B C	-	-
How often do you ask them about sexual satisfaction?	None	-	-	A B
	Half of the time	-	-	-
	Almost all the time	-	C	-
	All the time	B	-	-
If they indicate abstinence, how often do you ask for clarification (that is what they mean by the term)?	None	-	-	A B
	Half of the time	-	-	-
	Almost all the time	-	C	-
	All the time	-	-	-

the A column. The key AB appears under the C key for the 'none' response. No other keys are reported in other columns. Thus, the proportions of people who are medical officers are significantly greater than nurses and other HCPs who responded that they do ask the older adults if they use injection drugs all the time ($p < 0.05$). The HCPs classified as others who never ask the older adults if they use injection drugs are significantly greater than the medical officers and the nurses ($p < 0.05$).

On the question of how often the HCPs ask the older adults about their sexual satisfaction, the proportion of Medical officers who responded 'all the time' are significantly greater than those of the nurses ($p < 0.025$), while the proportion of nurses who responded 'almost all the time' is significantly greater than others ($p < 0.025$). The proportion of others that responded that they do not ask for clarification about abstinence is significantly greater than those of medical officers and nurses while the proportion of nurses that they ask for clarification almost all the time are significantly greater than the Medical officers and others. The other proportions are not significantly different.

General attitude of HCP towards the PLHIV including discrimination

Over half of the HCPs (56.3%) agreed that they discriminate against older adults with HIV, while 38.1% indicated that HCPs do not discriminate against them.

The results of exploratory factor analysis (EFA) on the HCPs' attitudes towards PLHIV identified eight constructs namely: discrimination, education and training, tolerance, sexual attitude, blame, support, quality of life, and treatment of PLWHA (Adrien et al., 2012; Hossain and Kippax, 2010). Table 8 provides summary measures (%) of the responses of the HCPs in terms of these constructs after collapsing strongly agree and agree into agree and strongly disagree and disagree into disagree. The reliability coefficient of this scale was 0.6, indicating moderate internal consistency among the items.

Discrimination

Medical officers (95.7%), 93.8% of the nurses and 96.9% of the others disagree that, "If I knew that a shopkeeper or vendor had the AIDS virus, I would not buy fresh vegetables from that person", while 82.6% of medical officers, 87.8% of nurses and 95.2% of others disagree that, "People with HIV and AIDS should be on a separate ward in a hospital or clinic". However, only 86.4% of the medical officers, 93.7% of nurses and 95.3% of others agree that, "If a relative of mine became sick with the virus that causes HIV, I would be willing to care for her or him in our own household", and 82.6% of medical officers, 87.8% of nurses and 95.2% of others agree that "People with HIV and AIDS should be on a separate ward

Table 8. Attitude of HCPs towards HIV and PLHIV.

Item variable		Employment status (%)		
		Medical doctor	Nurse	Others
Discrimination				
If I knew that a shopkeeper or vendor had the AIDS virus, I would not buy fresh vegetables from that person	Disagree	95.7[a]	93.8[a]	96.9[a]
	Neutral	0.0[1]	0.0[1]	0.0[1]
	Agree	4.3[a]	6.3[a]	3.1[a]
If a relative of mine became sick with the virus that causes HIV, I would be willing to care for her or him in our own household.	Disagree	13.6[a]	5.6[a]	4.7[a]
	Neutral	0.0[1]	0.8[a]	0.0[1]
	Agree	86.4[a]	93.7[a]	95.3[a]
People with HIV and AIDS should be on a separate ward in a hospital or clinic	Disagree	82.6[a]	87.8[a]	95.2[a]
	Neutral	4.3[a]	4.1[a]	1.6[a]
	Agree	13.0[a]	8.1[a]	3.2[a]
A person with HIV and AIDS cannot be treated effectively in this facility	Disagree	91.3[a]	86.2[a]	90.3[a]
	Neutral	0.0[1]	7.3[a]	4.8[a]
	Agree	8.7[a]	6.5[a]	4.8[a]
A person's HIV status can be determined by his/her appearance	Disagree	87.0[a]	88.6[a]	95.2[a]
	Neutral	4.3[a]	4.9[a]	4.8[a]
	Agree	8.7[a]	6.5[a]	0.0[1]
I would shake hands with someone who is infected with the virus that causes AIDS	Disagree	4.3[a]	25.8[a]	12.5[a]
	Neutral	0.0[1]	0.8[a]	0.0[1]
	Agree	95.7[a]	73.4[a]	87.5[a]
In a health facility, people with HIV should sit in a separate area from other people	Disagree	100.0[1]	88.9[a]	95.2[a]
	Neutral	0.0[1]	2.4[a]	0.0[1]
	Agree	0.0[1]	8.7[a]	4.8[a]
Education and training				
Children who are infected with the HIV virus will be allowed to go to school with other children	Disagree	0.0[1]	7.0[a]	3.3[a]
	Neutral	0.0[1]	0.9[a]	0.0[1]
	Agree	100.0[1]	92.2[a]	96.7[a]
Children aged 12-14 should be taught about using a condom to avoid HIV	Disagree	13.0[a,b]	24.2[a]	8.1[b]
	Neutral	8.7[a]	6.5[a]	4.8[a]
	Agree	78.3[a,b]	69.4[a]	87.1[b]
Children aged 10 -11 should be taught about using a condom to avoid HIV	Disagree	17.4[a]	45.6[b]	42.6[a,b]
	Neutral	34.8[a]	28.8[a]	42.6[a]
	Agree	47.8[a]	25.6[a,b]	14.8[b]
Tolerance				
If a female teacher has the HIV virus, but is not sick, I should allow her to continue teaching in the school	Disagree	9.1[a]	4.7[a]	4.8[a]
	Neutral	0.0[1]	0.0[1]	0.0[1]
	Agree	90.9[a]	95.3[a]	95.2[a]
If a male teacher has the HIV virus, but is not sick, I should allow him to continue teaching in the school	Disagree	18.2[a]	7.3[a]	6.5[a]
	Neutral	0.0[1]	0.8[a]	0.0[1]
	Agree	81.8[a]	91.9[a]	93.5[a]

Table 8 Contd.

Sexual Attitude				
A wife is justified in refusing to have sex with her husband when she knows he has a disease that can be transmitted through sexual contact.	Disagree	52.4[a]	48.4[a]	85.2[b]
	Neutral	14.3[a]	3.3[a]	1.6[a]
	Agree	33.3[a,b]	48.4[a]	13.1[b]
Blame				
People who become infected with HIV through unprotected sex have themselves to blame	Disagree	60.9[a]	65.3[a]	79.0[a]
	Neutral	0.0[1]	10.5[a]	8.1[a]
	Agree	39.1[a]	24.2[a,b]	12.9[b]
Support to PLHIV				
People with HIV deserve the same level of support and respect as people with cancer or any other disease.	Disagree	13.0[a]	10.5[a]	8.1[a]
	Neutral	4.3[a]	4.0[a]	0.0[1]
	Agree	82.6[a]	85.5[a]	91.9[a]
Most people these days with HIV can work like anyone else	Disagree	4.3[a]	8.1[a]	1.6[a]
	Neutral	0.0[1]	0.0[1]	0.0[1]
	Agree	95.7[a]	91.9[a]	98.4[a]
I would feel comfortable working with a colleague who had HIV	Disagree	9.1[a]	9.7[a]	1.6[a]
	Neutral	0.0[1]	0.8[a]	1.6[a]
	Agree	90.9[a]	89.5[a]	96.8[a]
If someone from my family told me they were HIV positive it would not damage my relationship with them.	Disagree	13.6[a]	11.3[a]	3.2[a]
	Neutral	0.0[1]	0.0[1]	0.0[1]
	Agree	86.4[a]	88.7[a]	96.8[a]
If a member of my family got infected with the virus that causes AIDS, I would not be embarrassed or feel shame for my family	Disagree	18.2[a]	12.6[a]	7.8[a]
	Neutral	0.0[1]	2.4[a]	0.0[1]
	Agree	81.8[a]	85.0[a]	92.2[a]
If a member of my family got infected with the virus that causes AIDS, I would want it to remain a secret	Disagree	27.3[a,b]	22.0[a]	7.9[b]
	Neutral	31.8[a]	17.3[a]	15.9[a]
	Agree	40.9[a]	60.6[a,b]	76.2[b]
If I found my neighbour was HIV positive it wouldn't damage my relationship with them	Disagree	21.7[a]	26.6[a]	12.9[a]
	Neutral	0.0[1]	0.8[a]	1.6[a]
	Agree	78.3[a]	72.6[a]	85.5[a]
Quality of life				
Eating fruits and vegetables can help people living with HIV and AIDS	Disagree	21.7[a]	8.9[a]	4.8[a]
	Neutral	0.0[1]	2.4[a]	1.6[a]
	Agree	78.3[a]	88.7[a]	93.5[a]
Good nutrition can make people who have HIV and AIDS live longer	Disagree	13.0[a]	8.9[a]	8.1[a]
	Neutral	0.0[1]	2.4[a]	0.0[1]
	Agree	87.0[a]	88.7[a]	91.9[a]
The quality of life of patients with HIV and AIDS can be improved with counselling	Disagree	4.3[a]	7.3[a]	3.2[a]
	Neutral	0.0[1]	0.8[a]	0.0[1]
	Agree	95.7[a]	91.9[a]	96.8[a]

Table 8 Contd.

Medications to treat opportunistic infections may prolong the life of a patient who is HIV-positive	Disagree	21.7[a]	18.7[a]	6.6[a]
	Neutral	0.01	0.8[a]	1.6[a]
	Agree	78.3[a]	80.5[a]	91.8[a]
Treatment				
I am not worried about HIV because good treatments are available now	Disagree	56.5[a,b]	38.2[a]	58.1[b]
	Neutral	0.0[1]	12.2[a]	14.5[a]
	Agree	43.5[a,b]	49.6[a]	27.4[b]
I can refuse to treat a patient with HIV and AIDS to protect myself and my family	Disagree	91.3[a]	90.2[a]	98.4[a]
	Neutral	0.0[1]	3.3[a]	0.0[1]
	Agree	8.7[a]	6.5[a]	1.6[a]
The treatment of opportunistic infections in patients with HIV and AIDS wastes precious resources	Disagree	91.3[a]	97.6[a]	96.7[a]
	Neutral	0.0[1]	0.0[1]	0.0[1]
	Agree	8.7[a]	2.4[a]	3.3[a]
Treating someone with HIV and AIDS is a waste of resources	Disagree	100.0[1]	99.2[a]	100.0[1]
	Neutral	0.0[1]	0.0[1]	0.0[1]
	Agree	0.0[1]	0.8[a]	0.0[1]

Values in the same row and sub-table not sharing the same subscript are significantly different at p< 0.05 in the two-sided test of equality for column proportions. Cells with no subscript are not included in the test. Tests assume equal variances. [1]This category is not used in comparisons because its column proportion is equal to zero or one.

in a hospital or clinic".

Education and training on HIV and AIDS

100% of the medical officers, 92.2% of nurses and 96.7% agree that, "Children aged 12 to 14 should be taught about using a condom to avoid HIV" (The proportions are not significant, p > 0.05), while there are significant differences in the opinions of HCPs on whether "Children aged 10 to 11 should be taught about using a condom to avoid HIV" (less than 50% agree they should be taught).

Tolerance to PLHIV

The tolerance level of PLHIV by HCP is high as 90.9% of medical officers, 95.3% of the nurses, and 95.2% of the others agree that, "If a male teacher has the HIV virus, but is not sick, I should allow him to continue teaching in the school", and 81.8% of medical officers, 91.9% of nurses and 93.5% of others agree that, "If a female teacher has the HIV virus but is not sick, I should allow her to continue teaching in the school". There are no significant differences between the proportions (p > 0.05).

Sexual attitude

There are significant differences in the attitude of the medical doctors (52.4%), nurses (48.4%) and others (85.2%) towards women whose spouses are HIV positive. These proportions agree that, "A wife is justified in refusing to have sex with her husband when she knows he has a disease that can be transmitted through sexual contact".

Blame

Only 60.9% of the medical officers, 65.3% of nurses and 79.2% of others disagree that, "people who become infected with HIV through unprotected sex have themselves to blame". The proportions are not significantly different (p>0.05). However 39.1% of medical officers and 24.2% of nurses agree that they have themselves to blame.

Support to PLHIV

There is an overwhelming agreement among the medical officers, nurses and others on the level of support to be accorded to PLHIV. For instance, 95.7% of the medical officers, 91.9% of nurses and 98.9% of others agree that "Most people these days with HIV can work like anyone else", and 90.9% medical officers, 89.5% of nurses and 96.8% of others agree that "I would feel comfortable working with a colleague who had HIV". However, only

40.9% of medical officers, 60.6% of nurses and 76.2% of others agree that “If a member of my family got infected with the virus that causes AIDS, I would want it to remain a secret”.

Quality of life of PLHIV

On the quality of life of the PLHIV, there are substantial proportions of the medical officers (78.3%, 87.0%), nurses (88.7%, 88.7%) and (93.5%, 91.9%) of others, respectively, who agree that, “Eating fruits and vegetables can help people living with HIV and AIDS” and “Good nutrition can make people who have HIV and AIDS live longer”. Additionally, an overwhelming majority of the medical officers (95.7%, 78.3%), nurses (91.9%, 80.5%) and others (96.8%, 91.8%) agree that counselling and treatment of opportunistic infection, respectively, can help improve the quality of life of the PLHIV. There are no significant differences in the opinions of the medical officers, nurses and others ($p > 0.05$).

Treatment to PLHIV

Over 90% of the medical officers, nurses and others disagree that, “I can refuse to treat a patient with HIV and AIDS to protect myself and my family”, “The treatment of opportunistic infections in patients with HIV and AIDS wastes precious resources” and “Treating someone with HIV and AIDS is a waste of resources”. The proportions are not significantly different ($p > 0.05$).

DISCUSSION

The paper obtained information on (i) socio-demographic characteristics of HCPs, (ii) HCPs’ knowledge of HIV and AIDS; and (iii) the attitude of HCP towards HIV and PLHIV vis-à-vis use of universal precautions, engagement between HCP and PLHIV and treatment.

On the knowledge of HIV and AIDS, the study showed that knowledge of protective measures to avoid HIV infection, mode of transmission and stigmatization were high among the HCPs. This is consistent with the findings of Rajderkar et al. (2012), who found out that correct knowledge about diagnosis of HIV and AIDS was known to 96.96% of HCPs. However, the results are in conflict with the findings from older previous studies that have shown that the knowledge and beliefs of HCPs about HIV and AIDS are frequently inaccurate and their attitudes are often negative (Gordin et al., 1987; Stanford, 1988; Van Servellen et al., 1988; Passannante, 1993; Plant and Foster, 1993). Khan et al. (2009) found out 45% of the HCPs had correct knowledge about the transmission and prevention of HIV. However, the result obtained in this study could be attributed to the high level of education the HCPs attained.

Nearly a third of the medical officers and nurses believe that all prospective workers, particularly, prospective health care workers should submit to mandatory HIV and AIDS testing. The observed results are in line with those obtained by Beggs and Jernigan (2001), who found out that a majority of all respondents (53.8%) (HCPs, 40.6%) favoured mandatory HIV testing for all hospital employees, while 45.3% of health care professionals were opposed to mandatory HIV testing, and a majority (63.9%) of nursing students were in favour of mandatory HIV testing. The 2012 Botswana National HIV and AIDS Treatment Guidelines (Government of Botswana, 2012) recommended that at every opportunity, health care workers must make every effort to screen and test all patients for HIV, but it is silent on HIV testing for the HCPs. In a study by Surgevil and Akyol (2011), half of the respondents stated that it was right to request an HIV test whereas 36% of them declared that it was not right.

Although the older adults’ knowledge of prevention and treatment of HIV and AIDS was good, HCPs reported their practices of safer sex and medication adherence as poor. This may have accounted for the HCPs’ major concern in the treatment of older adults with HIV which was found in the study to be due to low health literacy levels as reported by 68.8% of medical officers, 44.2% of nurses and 70% of others. Negin et al. (2011) showed that levels of awareness of prevention of mother-to-child transmission (PMTCT) and anti-retroviral treatment (ART) were lower among older adults. The findings are supported by other studies which have illustrated that those individuals with low health literacy have decreased levels of knowledge about their illness in general (Berkman et al., 2010; Murray et al., 2009; MacLean et al., 2009). Olives et al. (2011) noted that health literacy can negatively affect how a person navigates the health care system, communicates information to health care providers, engages in self-care and disease management, and utilizes formal health care services. Mismanagement of health care regimens due to low literacy can lead to poorer health outcomes and increased health care costs (Aikens and Piette, 2009).

Observation of the Universal Precautions is key in the treatment of PLHIV yet, only 71.2% of the HCPs practised it always, while 23.3% practised it most of the time and 3.3% of the HCP did not know about it. This finding concurs with those of Wu et al. (2008), which showed that the majority of the providers interviewed practiced selective adherence and non-adherence to universal precautions. In Uganda, nurses did not always observe universal precautions unless they knew the HIV status of the patients (Nderitu et al., 2014). The World Health Organization (WHO) estimates that about 2.5% of HIV cases and 40% of hepatitis B and C cases among health service providers worldwide are the result of working with related exposure (World Health Organization, 2002). Compliance with universal

precautions has been shown to reduce the risk of exposure to blood and bodily fluids (Sridhar et al., 2004). Therefore, more emphasis must be placed on using universal precautions for all blood-borne infections (Nderitu et al., 2014).

In this study, there was a very small engagement between the HCPs and the older adults on their sexual characteristics, yet the 2012 Botswana National HIV and AIDS Treatment Guidelines (Government of Botswana, 2012) recommended that frank discussions regarding sexual behaviour, including participation in multi-concurrent partnerships, discordant couples, sexual orientation and correct and consistent use of condoms should be routinely initiated. The greater proportion of medical officers (47.6%), nurses (37.5%) and others (64.5%) never had any discussion with the older adults on their sexual satisfaction. HCPs expressed discomfort in discussing HIV and AIDS with patients older than 50 years (Davis et al., 2015). The finding in this study is also in line with Lindau et al. (2007), who found out those older patients reported receiving little information about sexual health, HIV, and other STIs from their physicians, despite still being sexually active.

Most HCPs (76.2% of medical officers; 80.4% of nurses and 93.3% of others) stated that there was discrimination of PLHIV and 56.3% admitted that HCPs do discriminate against older adults with HIV. The results are in line with Adrien et al. (2012) who showed that overall, Quebecers had positive attitudes toward PLHIV, with more negative attitudes observed in subgroups defined as male, greater or equal to 50 years of age, less than 14 years of education, higher levels of homophobia, and below-average knowledge about HIV transmission. In the study by Hossain and Kippax (2010), a moderate level of discriminatory attitudes was observed among the health care workers (HCWs).

Limitations

This study was conducted in four districts only and some of the responses may have been socially undesirable ones but the researchers merely relied on the fact that the HCPs will provide accurate information. The findings may not be generalized to the whole country but the excellent methodology adopted in this study can be replicated to a larger and more representative sample, in terms of number of districts and health care providers, to validate these findings. Qualitative studies conducted on knowledge attitude and practices of HCPs caring for HIV positive people would also give more insight into the study findings.

Conclusion

Following the findings from the study, it is concluded that the health care providers are knowledgeable about HIV and AIDS and their attitudes and practices are positive towards PLHIV. However, there were reports of discrimination of HCPs against PLHIV and undesirable universal precaution practices. The study also shows that there is very little engagement between the HCPs and the older adults on their sexual characteristics, which they attributed to the low literacy of the PLHIV. Appropriate intervention program to reduce discrimination of PLHIV among health care practitioners and to improve the HCPs universal precaution practices need to be introduced. Programs that address the health literacy of older adults need to be implemented as this will improve openness in discussion of their health issues with the health care providers. A nationally representative study should be conducted to address the issue of mandatory HIV testing of HCPs and appropriate policies put in place.

Conflict of interest

The authors have not declared any conflict of interets

ACKNOWLEDGEMENT

This study was made possible through funding of the Office of Research and Development at the University of Botswana.

REFERENCES

Adrien A, Beaulieu M, Leaune V, Perronc M and Cle´ment D (2012). Trends in attitudes toward people living with HIV, homophobia, and HIV transmission knowledge in Quebec, Canada (1996, 2002, and 2010). AIDS Care, pp.1-11.

Aggleton P (2002). Barcelona 2002: Law, ethics, and human rights. HIV/AIDS-related stigma and discrimination: A conceptual framework. Canadian HIV-AIDS Policy Law Rev. 7:115-116.

Aikens JE, Piette JD (2009). Diabetic patients' medication underuse, illness outcomes, and beliefs about antihyperglycemic and antihypertensive treatments. Diabetes Care 32:19-24.

Bermingham S, Kippax S (1998). HIV-related discrimination: a survey of New South Wales general practitioners. Aust. N Z J Public Health 22:92-97.

Bharat S, Aggleton P, Tyrer P (2010). India: HIV and AIDS-related discrimination, stigmatization and denial. Geneva: Joint United Nations Programme on HIV/AIDS 2001:16-17.

Beggs JM, Jernigan IE (2001). Mandatory HIV/AIDS Testing: An Ethical Issue. Int. J. Value-Based Manage. 14:131-146.

Berkman ND, Davis TC, McCormack L (2010). Health literacy: what is it? J Health Commun. 15(Suppl 2):9-19.

CDC (2013). HIV Among Older Americans. Available at: http://www.cdc.gov/hiv/pdf/library_factsheet_HIV_%20AmongOlderAmericans.pdf Accessed 13 November, 2015

Chesney MA, Smith AW (1999). Critical delays in HIV testing and care: The potential role of stigma. The Am. Behav. Sci. 42:1162-1174.

Clarke JN (2006). Homophobia out of the closet in the media portrayal of HIV/AIDS 1991, 1996 and 2001: Celebrity, heterosexism and the silent victims. Crit. Public Health 16:317-330.

Central Statistics Office (CSO) (2009). 2008 Botswana AIDS Impact Survey III Statistical Report. Central Statistics Office, Gaborone.

Davies CF, Gompels M, May MT (2015). Public and Healthcare Practitioner Attitudes towards HIV Testing: Review of Evidence from

The United Kingdom (UK). Int. STD Res. Rev. 3(3):91-122.
Edward JM, Bärnighausen T, Negin J (2012). HIV and Aging - Preparing for the Challenges Ahead. HIV and Aging - Preparing for the Challenges Ahead. N. Engl. J. Med. 366(14):1270-1273.
Effros RB, Fletcher CV, Gebo K, Halter JB, Hazzard WR, Horne FM, Huebner RE, Janoff EN, Justice AC, Kuritzkes D, Nayfield SG, Plaeger SF, Schmader KE, Ashworth JR, Campanelli C, Clayton CP, Rada B, Woolard NF, High KP (2008). Workshop on HIV infection and aging: What is known and future research directions. Clin. Infect. Dis. 47(4):542-553.
Fortenberry JD, McFarlane M, Bleakley A, Bull S, Fishbein M, Grimley DM, Stoner BP (2002). Relationships of stigma and shame to gonorrhea and HIV screening. Am. J. Public Health 92:378-381.
Gordin FM, Willoughby AD, Levine LA, Gurel L, Neill KM (1987). Knowledge of AIDS among hospital workers. Behav. Correlates Conseq. 1:183-188.
Government of Botswana (2012). The 2012 Botswana National HIV and AIDS Treatment Guidelines. Ministry of Health, P/Bag 0038, Gaborone, Botswana
Härkönen A (2004). Service Innovation Resistance among Mature Consumers. The 2004 European Marketing Academy Conference, 18-21 May in Murcia, Spain.
Hossain MB, Kippax S (2010). HIV-related Discriminatory Attitudes of Healthcare Workers in Bangladesh. Health Popul. Nutr. 28(2):199-207.
Khan MS, Unemo M, Zaman S, Lundborg CS (2009). Knowledge, attitudes and practices regarding human immunodeficiency virus/acquired immune deficiency syndrome and sexually transmitted infections among health care providers in Lahore, Pakistan. J. Ayub Med. Coll. Abbottabad. 21(4):1-6.
Li L, Wu Z, Lin C, Guan J, Rotheram-Borus MJ, Lu Y, NIMH Collaborative HIV/STD Prevention Trial Group. (2009). Mass media and HIV/AIDS in China. J. Health Commun. 14: 424-438.
Lichtenstein B (2003). Stigma as a barrier to treatment of sexually transmitted infection in the American deep south: Issues of race, gender and poverty. Social Sci. Med. 57:2435-2445.
Lindau ST, Schumm LP, Laumann EO, Levinson W, O'Muircheartaigh CA, Waite LJ (2007). A study of sexuality and health among older adults in the United States. N. Engl. J. Med. 357(8):762-774.
MacLean CS, Gagnon M, Callas P, Littenberg B (2009). The Vermont diabetes information system: a cluster randomized trial of a population based decision support system. J. Gen. Intern. Med. 24:1303-1310.
Mensah MN, Waugh T, Lavoie R, Dumas J, Bernier M, Garneau MJ, Otis J (2008). ‘‘The VIHsibilite Project’’: HIV-positive people in the Quebec press and community responses. AIDS Care 20:596-600.
Ministry of Health (2008). Health facility register, Government of Botswana. Gaborone
Murray MD, Tu W, Wu J, Morrow D, Smith F, Brater DC (2009). Factors associated with exacerbation of heart failure including treatment adherence and health literacy skills. Clin. Pharmacol. Ther. 85:651-658.
Nderitu WE, Mill J, Richter S (2014). The experience of Ugandan nurses in the practice of universal precautions. J. Assoc. Nurses AIDS Care pp. 1-14.
Negin J, Cumming RG (2010). HIV infection in older adults in sub-Saharan Africa: extrapolating prevalence from existing data. Bull World Health Organ. 88:847-853.
Negin J, Nemser B, Cumming R, Lelerai E, Amor YB, Pronyk P (2011). AIDS Behaviour Springer Science+Business Media, LLC 2011. HIV Attitudes, Awareness and Testing Among Older Adults in Africa, DOI 10.1007/s10461-011-9994-y
Olives T, Patel R, Patel S, Hottinger J, Miner JR (2011). Health literacy of adults presenting to an urban Emergency Department (ED). Am. J. Emerg. Med. 29:875-882.
Oyeyemi A, Oyeyemi B, Bello I (2006). Caring for patients living with AIDS: knowledge, attitude and global level of comfort. J. Adv. Nurs. 53(2):196-220.
Passannante MR, French J, Louria DB (1993). How much do health care providers know about AIDS? Am. J. Prev. Med. 9:6-14.
Plant ML, Foster J (1993). AIDS-related experience, knowledge, attitudes and beliefs among nurses in an area with a high rate of HIV infection. J. Adv. Nursing. 18:80-88.
Rajderkar SS, Langare SD, Naik JD (2012). Knowledge, Beliefs and Attitudes about HIV/AIDS among Health Care Providers of Govt. Medical College and Hospital, Miraj, Maharashtra. Inter. J. Health Sci. Res. 2(1):82-90.
Sadoh AE, Fawole AO, Sadoh WE, Oladimeji A, Sotiloye OS (2006). Attitudes of Healthcare Workers to HIV/AIDS. Afr. J. Reprod. Health 10(1):39-46.
Sevick MA, Bradham DD (1997). Economic value of caregiver effort in maintaining long-term ventilator-assisted individuals at home. Heart Lung. 26(2):148-157.
Smith DM, Mathews WC (2007). Physicians' attitudes toward homosexuality and HIV: survey of a California Medical Society-revisited (PATHH-II). J. Homosex. 52(3-4):1-9.
Sridhar MR, Boopathi S, Lodha R, Kabra SK (2004). Standard precautions and post exposure prophylaxis for preventing infections. Indian J. Pediatr. 71:617-626.
Stanford J (1988). Knowledge and attitudes to AIDS. Nursing Times 8:47-50.
Statistics Botswana (2013). Preliminary Results Botswana AIDS Impact Survey IV (BAIS IV), Private Bag 0024 Gaborone, Botswana
Surgevil O, Akyol EM (2011). Discrimination against people living with HIV/AIDS in the workplace: Turkey context. Equal. Divers. Inclusion: An Int. J. 30(6):463-48.
The Survey Systems (2012). Sample size calculator. Available at: http://www.surveysystem.com/sscalc.htm
UNAIDS report on the global AIDS epidemic (2010). Geneva: Joint United Nations Programme on HIV/AIDS, 2010 Available at: http://www.unaids.org/globalreport/global_report.htm.
Visser PS, Krosnick JA, Marquette J, Curtin M (1996). Mail Surveys for Election Forecasting? An Evaluation of the Columbus Dispatch Poll. Public Opin. Quarterly 60(2):181-227.
Van Servellen GM, Lewis CE, Leake B (1988). Nurses' responses to the AIDS crises: implications for continuing education programs. J. Cont. Educ. Nur. 19:4-8.
World Health Organization. (2002). The world health report 2002: Reducing risks, promoting health life. World Health Organization; Geneva:
Wu S, Li L, Wu Z, Cao H, Lin C, Yan Z, Cui H (2008). Universal precautions in the era of HIV/AIDS: Perception of health service providers in Yunnan, China. AIDS Behav. 12(5):806-814.