Bulletin of Faculty of Pharmacy, Cairo University 56 (2018) 104–108

Contents lists available at ScienceDirect

Bulletin of Faculty of Pharmacy, Cairo University

journal homepage: www.elsevier.com/locate/bfopcu

Original Article

Knowledge and practice of health care workers towards post exposure prophylaxis in the era of low and stable HIV prevalence in Southwestern Nigeria

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ARTICLE INFO

Keywords:
Post exposure prophylaxis
Health care workers
HIV
Southwestern Nigeria

ABSTRACT

Nigeria ranks top among the countries with the highest burden of Human Immune-deficiency Virus (HIV) infection. Despite ready-made access to HIV care, Post-Exposure Prophylaxis (PEP) practices have not increased commensurately due to several gaps within the health sector. This research was undertaken to assess knowledge and practice of health care workers towards PEP of HIV in Southwestern Nigeria. A descriptive cross sectional study was carried out among 300 health care workers selected using the multi-staged sampling method. Research instruments used were self-administered pre tested and semi structured questionnaires. Data collected were analyzed using the SPSS software version 17.0.

One hundred and four (34.7%) of respondents said they occasionally recap used needles, one hundred and eighty-one (60.3%) have heard about PEP. Only 2.7% had good mean knowledge scores while 57.3% and 40.0% had moderate and poor mean knowledge scores of PEP respectively. Only 24 (13.3%) knew the correct number of drugs combinations, 36 (19.9%) knew the antiretroviral drugs administered; 113 (62.4%) believed that the drugs were antibiotics. Forty-four (14.7%) had needle stick injuries in the last 6 months, out of which 29 (65.9%) used PEP. Predictors of good knowledge of PEP on logistic regression include male gender, having spent more than 5 years in hospital practice, having heard about PEP and being aware of the national PEP guidelines. There is a need to create better awareness about PEP among health care workers to reduce and prevent occupational HIV transmission.

1. Introduction

HIV still remains the scourge of our times and a disease of significant public health importance. Nigeria ranks top among the countries with the highest burden of HIV/AIDs.[1] About 2.5% of the global HIV cases are due to occupational exposures among health care workers [1]. Occupational exposure to blood or other body fluids constitute a small, but significant risk of transmission of HIV and other blood-borne pathogens amongst health care workers HCWs [2]. Despite readymade access to HIV care, PEP practices among health care workers have not increased commensurately due to several gaps within the Nigerian health sector [3].

Post-exposure prophylaxis of HIV was recommended by WHO/ILO [4].When administered shortly following an accidental exposure, PEP treatment has been shown to significantly reduce the risk of HIV infection [5]. Despite the national PEP guidelines being widely circulated in Nigeria, HCWs were reported to have poor knowledge of the guidelines [6], and had been taking inadequate measures following occupational exposures to HIV [7]. This may not be unconnected with the reported poor knowledge and compliance with standard precautions among HCWs most especially in developing countries [8,9].

A comparism of the last two HIV sero-prevalence surveys in Nigeria has shown a marginal increase in the prevalence of HIV infection in some Nigerian states including Osun state. This may have led to a heightened concern among the various cadres of health care workforce in terms of its impact on the practice and safety of the practitioners [10]. PEP is an effective method of preventing HIV infection among the exposed health care workers [11].

With the concept of the 'right to know', health care workers and clients could demand for their rights to know the HIV status of each other before certain treatments and procedures can be instituted to prevent infections. It is therefore important to identify the gap existing between knowledge and practice relating to standard precautions. Newly recruited health workers could be at higher risk because they are probably starting work newly, have little information about HIV and PEP and have not been trained on the use of PEP in preventing HIV

Peer review under responsibility of Faculty of Pharmacy, Cairo University.
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https://doi.org/10.1016/j.bfopcu.2018.03.003
Received 13 November 2017; Received in revised form 27 January 2018; Accepted 5 March 2018
Available online 13 March 2018

among the exposed such as rape victims and health care workers who sustained needle stick injuries.

Determining the knowledge and practice of PEP among HCWs would identify their needs and the next line of action when exposed to HIV. The gap between the knowledge or attitude to PEP by the healthcare workers and their poor practices is unacceptable. Therefore a study to determine factors that contribute to these poor practices can provide reliable information to stem the tide of acquisition and reduces the risk of getting infected when exposed to HIV. This study assessed knowledge and practice of health care workers towards PEP of HIV in Southwestern Nigeria.

2. Materials and methods

2.1. Study area

This study was carried out in Osun State in southwestern Nigeria, with a population of about 4.2 million according to a projection of the 2006 National population census [12]. HIV prevalence in the state was lower than the national average put at 5.1% [13], however the State prevalence rate increased from 2.7 to 3.0 according to the 2013 National AIDs and Reproductive Health survey [13]. There are 3 levels of health care namely the primary being managed by the Local Government, the secondary by the State Government and the tertiary by both the State and Federal Governments. There are 2 teaching and nine general hospitals, and numerous primary health care centers in the state. In Osogbo town which is the capital city of Osun state, there is a teaching hospital, two secondary health facilities and eight primary health care centers PHCs. The health care workers are exposed to needle stick injuries, and percutaneous exposures to fluids of suspected and confirmed HIV cases. They also manage rape cases and other sexually assaulted clients which is another indication for PEP. Unlike in many other states of Nigeria, Authors also observed little presence of non governmental organizations (NGOs) working in the area of HIV/AIDs in Osun state and thus, the availability of donor funded PEP kits may not readily be guaranteed.

2.2. Study population

Only Government health facilities at primary, secondary and tertiary care levels were recruited into this study. To reduce possible bias from variation in job knowledge acquired due to the number of years of experience put in practice, health care workers who have spent less than one year in their present work-station were excluded from the study. In addition, only core clinical health care workers (who deals directly with patients and are at high risk) were recruited into the study.

2.3. Study design

Descriptive cross sectional study.

2.4. Sample size estimation

Using the Leslie Fischer's formular for the calculation of sample size for population less than 10,000 [14], a sample size of 271 was calculated and this number was increased to 300 to account for attrition cases and non-responses.

2.5. Sampling method

The multi-stage sampling method was employed in sample selection. In stage one, the only teaching hospital (LAUTECH), one of the two secondary health facilities (General Hospital Asubiaro) and four of the eight PHCs were selected using simple random sampling employing simple balloting. Each hospital was divided into clinics, laboratory and ward units. Questionnaires were equally allocated to the health facilities and units using proportionate allocation technique. Questionnaires were conveniently administered on eligible health care workers met in selected units on the day of visit to the health facility. A total of 2 visits to each of the health facilities were made.

2.6. Research instruments

For data collection include semi structured, self administered and pre-tested questionnaires conducted by 3 research assistants. Pre-testing was done among ten randomly selected nurses at the General Hospital Oluyoro Ibadan, and the responses were used to further modify the questionnaires. The HIV project managers of three health facilities (each per level of care) offering donor funded HIV care reviewed the questionnaire for construct validity. Questionnaires consist of sections on socio-demographic data, indication and knowledge, attitude and practice of PEP.

2.7. Ethical approval

The ethical approval to conduct this study was obtained from LAUTECH Teaching Hospital Research ethics committee. Further permission was taken from the management of the hospitals while written informed consent was obtained from each of the health care workers who responded to the study instrument.

2.8. Data management

The Statistical Package for Social Sciences software version 17.0 (SPSS Inc, Chicago, IL, USA) was used for data analysis after data cleaning Validity of data entered was ensured by double data entry and random manual checks. The Chi square test and binary logistic regression model was used to explore associations between selected categorical variables, and p values were considered significant at values less than or equal to 0.05.Mean knowledge score was computed in two ways using the 16 knowledge questions. A correct answer attracted one mark while a zero was awarded to an incorrect answer. Knowledge scores was categorized into good (8–16 points), and poor (0–7). Good mean knowledge was further re-categorized into good knowledge (12–16 points) and moderate (8–11 points).

3. Results

Table 1 shows that a majority 276 (92.0%) of the respondents were

Table 1
Socio-demographic data of respondents.

Variables	N	%
Age		
< 25	24	8.0
> 25	376	92.0
Sex		
Male	101	33.7
Female	199	66.3
Marital status		
Never married	21	7.0
Married	238	79.3
Others	41	13.7
Occupation/designation		
CHEW	151	50.3
Medical lab scientist	54	18.0
Nursing	95	31.7
No of years put in clinical practice		
< 5 years	247	82.3
≥5 years	53	17.7

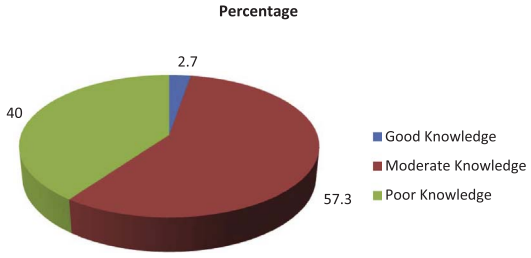

Fig. 1. Mean Knowledge scores of PEP.

Table 2
PEP related knowledge among respondents.

Variable	f	%
HCWs are occupationally at high risk of contracting HIV/HBV		
Yes	280	93.3
No	20	6.7
Rape victims can also contract HIV from rapist		
Yes	289	96.3
No	11	3.7
Have you heard about PEP		
Yes	181	60.3
No	97	32.4
Not sure	22	7.3
How soon after exposure to needle stick injury should PEP be taken (n = 181)		
Immediately-6 h	139	76.8
Other responses	20	23.2
How many days treatment (n = 181)		
28 days-1 month	109	60.2
Other period	27	14.9
Don't know	45	24.9
How many drugs combination should one take for PEP (n = 181)		
Three	24	13.3
Other responses	109	60.2
Don't know	48	26.5
Route of admin (n = 181)		
Mouth	104	57.5
Others	71	39.2
Don't know	6	3.3
Name the drugs (n = 181)		
ARV	36	19.9
Antibiotics	113	62.4
Don't know	32	17.7
I occasionally recap used needles('Yes' option only)	104	34.7
Had needles stick in the last 6 months ('Yes' option only)	44	14.7
Used PEP at last needle prick ('Yes' option only) n = 44	29	65.9
Aware of national guidelines on PEP ('Yes' option only) n = 181	147	81.2
Aware of hospital policy on PEP ('Yes' option only) n = 181	87	48.1
Had PEP/ related training in the last one year ('Yes' option only) n = 181	73	40.3
Would like to encourage occupationally injured staff/rape victims to take PEP('Yes' option only)	250	86.3
Why not take PEP at your last needle stick (multiple response) n = 44		
Unavailable	11	25.0
Don't know it exists	9	20.5
Fear of stigma and discrimination	12	27.2
Others e.g. Just believe I can't get HIV	6	13.6

above 25 years of age, 101 (33.7%) were male, 21 (7.0%) were never married, 151 (50.3%) were community health extension workers (CHEWs), 54 (18.0%) were medical laboratory scientists while 95 (31.7%) were nurses. Two hundred and forty-seven (82.7%) had put in only less than 5 years into hospital care practice. Fig. 1 shows that only few 2.7% of the respondents had good mean knowledge score while 57.3% and 40% had moderate and poor knowledge scores of PEP respectively.

Table 2 shows some specific PEP related knowledge. Two hundred and eighty (93.3%) said that HCWs are at high risk of contracting HIV and Hepatitis B infections, 289 (96.3%) said rape victims can also contract HIV from rapist while 104 (34.7%) said they occasionally recap used needles. One hundred and eighty-one (60.3%) of respondents have heard about PEP. One hundred and thirty-nine (78.8%) knew that PEP should be given immediately and at most within 6 h of occupational exposures, 109 (60.2%) knew the duration of treatments. Only few respondents 24 (13.3%) knew the recommended number of drug combinations, 104 (57.5%) knew the route of administration of PEP drugs while only 36 (19.9%) knew the drugs were antiretroviral drugs; 113 (62.4%) believed that the drugs were antibiotics.

Forty-four (14.7%) of the respondents had needle stick injuries in the last 6 months, out of which 29 (65.9%) used PEP. Among those who were aware of PEP, 147 (81.2%) were aware of the national guideline on PEP, while 73 (40.3%) have had PEP or related training in the last one year. Majority 250 (86.3%) of the respondents said they would like to encourage occupationally injured workers or rape victims to take PEP. Common reasons given by those who had needle stick injuries but did not take PEP include that it was not available, ignorance of PEP, fear of HIV stigma and discrimination and the belief that they cannot contract HIV.

Table 3 shows both bi-variate and logistic regression analysis between mean knowledge of PEP and some selected variables of interest. On bi-variate analysis, there was statistically significant associations between PEP mean knowledge score and the following: gender, designation of respondents, number of years put into practice, having heard about PEP and awareness of the Nigerian national PEP guidelines ($p < 0.05$).

Using mean knowledge as the outcome variable on binary logistic regression, male respondents were about twice more likely to have good mean knowledge score of PEP than the female and this observation was found to be statistically significant (OR 2.1, 95%CI 1.251–3.495 and p-0.002). Medical laboratory scientists were 1.7 times more likely to have a good mean knowledge score compared to the non– medical laboratory scientists (OR 1.7, 95%CI 0.920–3.297 and p-0.043). Respondents who had put in more than 5 years into hospital practice were 3.5 times more likely to have good mean knowledge compared to those with less than 5 years (OR 3.5, 95%CI 1.659–7.181 and p-0.001).

Respondents who have heard about PEP were 2.4 times more likely to have good mean knowledge scores compared to those who have not (OR 2.4, 95%CI 1.442–3.997 and p-0.001). Respondents who were aware of the national PEP guidelines were 7.8 times more likely to have a good mean knowledge score of PEP compared to those who were not (OR 7.8, 95%CI 4.585–13.167 and p-0.001) and this observation was found to be statistically significant.

4. Discussions

In this study, about two-thirds of respondents have heard about PEP. This awareness is low when compared to similar studies documenting majority of respondents – above 90% [15–17]. High awareness could be an important precursor and indicator of high in-depth knowledge of HIV transmission and the need to protect oneself from contacting the virus. The poor knowledge of PEP found in this study however agreed with other studies in which majority had inadequate knowledge about post exposure prophylaxis of HIV [18]. This has also been supported by some other studies documenting inadequate knowledge [11,17,19], despite high awareness reported by some of these studies. These trends may not be unconnected with the several gaps in information acquisition and sharing and on- the – job training within the Nigerian health system. In Nigeria, most training on PEP and HIV programmes providing access to PEP resources are donor funded. With dwindling donor funding and other competing priorities, it may be impossible to support all health care facilities and health care workers having formal or on- the -job training on PEP since this is the major

Table 3
Association between mean knowledge score of PEP and some selected variables.

Bi- variate analysis	PEP knowledge				
	Good	Moderate	Poor	X^2	P value
Age					
> 25 years	7 (2.5)	160 (58.0)	109 (39.5)	1.498	0.473
< 25 years	1 (4.2)	12 (50.0)	11 (45.8)		
Sex					
Male	6(5.9)	66(65.3)	29(28.7)	12.675	0.002
Female	2(1.0)	106(53.3)	91(45.7)		
Designation					
Medical lab	6(11.1)	32(59.3)	16(29.6)	19.423	0.001
Non medical lab	2(0.8)	140(56.9)	104(42.3)		
No of years put in practice					
> 5 years	0(0.0)	43(81.1)	10(18.9)	15.262	0.001
< 5 years	8(3.1)	129(52.2)	110(44.5)		
Have heard about PEP (n = 278)					
Yes	6(3.3)	121(66.9)	54(29.8)	13.639	0.001
No	2(1.6)	51(42.9)	66(55.5)		
Aware of the national guidelines					
Yes	8(5.4)	118(80.3)	21(14.3)	79.087	0.001
No	0(0.0)	52(35.9)	93(64.1)		
Binary logistic regression	Odds Ratio	95% Confidence Interval		P value	
		Lower	Upper		
Sex (reference category = female)	2.1	1.251	3.495	0.002	
Designation (reference category = non-medical lab)	1.7	0.920	3.297	0.043	
No of years put in practice (reference category = < 5 years)	3.5	1.659	7.181	0.001	
Have heard about PEP (reference category = no)	2.4	1.442	3.997	0.001	
Aware of the national PEP guidelines (reference category = no)	7.8	4.585	13.167	0.001	

avenue for the majority of those who had good knowledge acquiring such vital information.

PEP involves the use of special drug combinations with specific and restricted instructions relating to its use and route of administration. Findings from our study agreed with those from a similar supportive study [17], in which only about one third of the respondents could name at least two of the recommended drugs for PEP, while about half knew when to commence PEP following occupational exposure to HIV [17]. PEP drugs are antiretroviral drugs with their own side effects, precautions and effective period. Thus health care workers who wish to take PEP should have adequate information and a counseling session that would assist them to fully benefit from PEP and preventing HIV transmission, in the event of occupational exposures.

Compared to the number of our respondents who reported occupational exposures through needle stick injuries, very few of our respondents eventually used PEP. In a supportive study, a third of respondents have had one form of accidental exposure or the other, and majority did not receive PEP in spite of their exposure to HIV-positive sources [15]. In another study among health care workers, less than one third treated themselves with PEP on exposure aggressively [20]. Similar findings were reported by other studies [16,18]. In yet another study, only one tenth of the exposed had taken PEP, but with inadequate information on the time of initiation of regimen, completion of prescribed drugs, duration of therapy and checking of HIV status after completion of regimen [21]. Similar use pattern was obtained from other studies [14–16].These reported poor trend and pattern of the use of PEP regimen portrays danger for the control and prevention of HIV.

However, the general belief by majority of our respondents that PEP can prevent HIV transmission is in consonance with findings from some other similar studies [11,20]. The choice of regimen and dose of PEP to be used depend on the type of exposure. The side effects of antiretroviral drugs could be a reason for non adherence to PEP regimen even after making a choice. The provision of a comprehensive universal precaution package and improved disposal of sharps in the hospital setting would go a long way in preventing diseases resulting from these occupational exposures. A limitation of this study was that doctors were not among the study population due to the protracted industrial strike embarked upon by doctors in the Government workforce, who incidentally are the one providing service to all the sampled health facilities.

Common reasons given by our respondents who had needle stick injury but did not take PEP include that it is not available, ignorance of PEP, stigma and discrimination and that they believed they cannot get HIV. In a supportive study, reasons given include lack of information about the existence of post-exposure prophylaxis service (one third), fear of stigma and discrimination (another one third [18]. In a similar supportive study, the main reasons for not seeking PEP among this group was lack of sufficient information (one third) followed by fear of the process and what could follow (28%) [22]. Thus NGOs and Government of Nigeria have roles to play in ensuring that PEP drugs are available in every hospital settings at no cost to the health care workers. Enlightenment and training programmes should be organized for health workers from time to time in order to improve in-depth knowledge of health care workers in order to prevent HIV transmission through occupational exposures.

5. Conclusion

Good awareness but poor knowledge of PEP was found among respondents studied in this research work. The practice of PEP was not observed by a significant proportion of respondents who had occupational exposures through needle stick injuries. The national PEP guidelines gives holistic description of what health care workers should do in the event of occupational exposures, while hospitals may need to compliment these efforts by formulating a written hospital policy on PEP use among her health care workers. Unfortunately, awareness of the national guidelines and presence of hospital written policy on PEP was reported by this study as inadequate. There is a need to create better awareness and conduct organized trainings on PEP among

Nigerian health care workers in order to limit occupational transmission of HIV by health care workers.

Acknowledgements

The author wish to thank the Medical Director and coordinators of Health facilities where data collection took place. The cooperation and consent given by members of the study population is also highly appreciated.

Funding

Author received no external funding towards the conduct of this research work.

Conflict of interest

None.

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