

Assessment of Knowledge, Attitude and Practice among health care workers regarding post-exposure prophylaxis for HIV in a tertiary care hospital

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Abstract

Background: HCWs are at risk of infection from blood-borne viruses including HIV, HBV and HCV. Post exposure prophylaxis (PEP) is recommended for occupational exposure to HIV depending on the level of risk to which the HCWs has been exposed. **Aim:** To assess the knowledge, attitude and practice among HCWs regarding post-exposure prophylaxis for HIV. **Material and Methods:** In this cross-sectional study, to assess awareness, respondents were asked if they had ever heard of PEP for HIV. Knowledge regarding the initial first aid measures in case of accidental exposure, ideal time for initiation, and duration of PEP were assessed. Awareness regarding reporting of any incidence of occupational exposure was also assessed. Respondents were also asked about the practice of PEP for HIV in case of exposure. **Results:** Overall 427 (71.40%) study subjects had knowledge about PEP for HIV. Hundred percent doctors aware about PEP for HIV. Most of the HCWs aware about PEP for HIV and had adequate knowledge about procedures included in PEP. Name of drugs recommended for PEP were known to 321(53.68%) study subjects mostly they were doctors i.e. 173 (86.93%) followed by nurses i.e. 147 (61%). Out of 279 study subjects who sustained sharps injury only 72 (25.81%) study subjects reported their injury to appropriate authority i.e. 22 (24.18%) doctors, 39 (29.55%) nurses. **Conclusion:** Knowledge regarding post-exposure prophylaxis for HIV among study subjects is good among Doctors and Nurses and poor among lab technicians and servants. As the importance of PEP is included in medical curriculum, incorporate this in nursing, technicians curriculum.

Keywords: Health care workers, HIV, post-exposure prophylaxis, knowledge, attitude, practice

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INTRODUCTION

Health care workers (HCWs) are at a great risk to get infected with an HIV as an occupational hazard.¹ In spite

of taking universal precautions, accidents do happen. Consequently, HCWs are at risk of infection from blood-borne viruses including HIV, HBV and HCV. These blood-borne infections have serious consequences, including long term illness, disability and death.^{2,3} The vast majority of incidents of occupational exposure to blood borne pathogens, including HIV, occur in health settings. Post exposure prophylaxis (PEP) is recommended for occupational exposure to HIV depending on the level of risk to which the HCWs has been exposed and any known or potential antiretroviral resistance in the index patient.⁴ Awareness of PEP for HIV is very crucial to ensure maximum utilization of PEP in any HIV prevention strategy. With this background and objectives to assess the knowledge, attitude and practice among HCWs regarding

post-exposure prophylaxis for HIV, the present study was taken up.

MATERIAL AND METHODS

Study design: Cross-sectional observational study.

Inclusion criteria: Health care workers working at Tertiary Care Hospital. Health care workers willing to participate in the study.

Exclusion criteria: Health care workers not willing to participate in the study.

There were 604 health care workers working at our place of study. After exclusion of 6 health care workers who did not satisfy inclusion criteria, a total of 598 health care workers were taken as study population. There were 199 Doctors (Residents, Associate and Assistant professors), 241 Nurses (Registered Staff nurses), 45 Laboratory technicians (Lab technicians and assistants) and 113 Servants (Sweeper, Ward boy). Interns, medical students and nursing students were not included as rotation of posting changes in between the study duration.

Methodology Approval from Institutional Ethics Committee was obtained beforehand. A pilot study was done on 50 study subjects to assess the feasibility and to test the proforma. The objectives of the study were explained to subjects and informed consent was obtained.

Methods of Data Collection

The interview technique was used for data collection. Predesigned and pretested questionnaire was used to record the necessary information. Detailed history involved personal details of the individual details of exposure to sharps injuries, then knowledge of post exposure prophylaxis of HIV and standard precaution taken after any occupational exposure. If the study subject had sharps injury more than once, then details of exposure in recent injury was recorded. To assess awareness, respondents were asked if they had ever heard of PEP for HIV. Knowledge regarding the initial first aid measures in case of accidental exposure, ideal time for initiation, and duration of PEP were assessed. Awareness regarding reporting of any incidence of occupational exposure was also assessed. Respondents were also asked about the history of any occupational exposure to blood or body fluids or needle stick injuries and the practice of PEP for HIV in case of exposure.

Knowledge of PEP for HIV⁵: Adequate Knowledge- when respondents correctly answer >75% of the nine knowledge questions. Inadequate knowledge- when the correct answer of respondents is <75% of the nine knowledge questions.

Knowledge of PEP drugs: As the new regimen of PEP drugs for HIV updated in December 2014 in NACO guidelines, as the study subjects knew about old regimen drugs name considered had knowledge about PEP drugs.

Attitude towards PEP use⁶⁻⁸: There were close ended questions to find out attitude of study subjects toward PEP use. Do you agree local preventive measures prevent HIV transmission? Do you agree reporting of injury to appropriate authority is helpful to prevent transmission? Do you agree taking of full course of PEP drugs is mandatory? Do you agree source patient testing for HIV is effective? Do you agree to get yourself tested for HIV is necessary? If study subjects answered “Yes” that means positive attitude, if answered “No” that means negative attitude. Some study subjects not gave any answer labelled as “No response”.

PEP use/practice reported as respondents have practiced using post-exposure prophylaxis of HIV following occupational exposure to HIV risky conditions.

Statistical analysis: Descriptive statistic (percentages) was used to summarize baseline characteristics of the study subjects. Association between the categorical variables was analysed by using Chi- square test.

RESULTS

Overall 427 (71.40%) study subjects had knowledge about PEP for HIV. Hundred percent doctors aware about PEP for HIV. About 215 (89.21%) nurses and 12 (26.67%) lab technicians heard about PEP for HIV. Only one servant heard about PEP for HIV. As doctors and sisters gave correctly answer >75% of knowledge questions so they had adequate knowledge of PEP for HIV while lab technicians and servants gave correctly answer <75% of knowledge questions so they had inadequate knowledge of PEP for HIV.

Table 1: Knowledge of study subjects regarding Post exposure prophylaxis for HIV

Study subjects	PEP knowledge		
	Yes	No	Total
Doctors	199 (100)	00 (00)	199
Nurses	215 (89.21)	026 (10.79)	241
Lab technicians	012 (26.67)	033 (73.33)	45
Servants	01(0.88)	112 (99.12)	113
Total	427(71.40)	171(28.60)	598

Most of the HCWs aware about PEP for HIV and had adequate knowledge about procedures included in PEP. Hundred percent of doctors aware about the local preventive measures taken after sharps injury, in nurses it was 89.21% and in lab technician 26.67%. Only one servant heard about PEP and had poor knowledge about procedure included in PEP. About 198 (99.50%) doctors, 202 (83.82%) nurses, 11 (24.44%) lab technicians knew that sharps injury should be reported. Hundred percent doctors, 193 (80.08%) nurses, 5 (11.11%) lab technicians were knowing that drugs are to taken following exposure. Awareness about testing and follow-up after sharps injury found in 197 (98.99%) doctors, 148 (61.41%) nurses, 3 (6.67%) lab technicians.

Table 2: Knowledge of study subjects regarding procedures included in Post exposure prophylaxis for HIV

Knowledge	Study subjects(n=598)			
	Doctors [n=199]	Nurses [n=241]	Lab technicians [n=45]	Servants [n=113]
Local preventive measures [427(71.40)]				
Present	199(100)	215(89.21)	12(26.67)	01(0.88)
Absent	00(00)	26(10.79)	33(73.33)	112(99.12)
Reporting of injury [412(68.90)]				
Present	198(99.50)	202(83.82)	11(24.44)	01(0.88)
Absent	01(0.50)	39(16.18)	34(75.56)	112(99.12)
Use of drugs [398(66.56)]				
Present	199(100)	193(80.08)	05(11.11)	01(0.88)
Absent	00(00)	48(19.92)	40(88.89)	112(99.12)
Testing and follow up [349(58.36)]				
Present	197(98.99)	148(61.41)	03(06.67)	01(0.88)
Absent	02 (01.01)	93 (38.59)	42(93.33)	112(99.12)

Name of drugs recommended for PEP were known to 321(53.68%) study subjects mostly they were doctors i.e. 173 (86.93%) followed by nurses i.e. 147 (61.00%) and one (2.22%) lab technician. None of servant had knowledge about name of drugs in PEP for HIV. Only 225 (37.63%) knew that PEP started within 2 hours of exposure including 114 (57.29%) doctors followed by 106 (43.98%), 4 (08.89%) lab technicians and 1 (0.88%) servant. Most of the study subjects 306 (51.17) knew the correct duration of PEP i.e. 157 (78.89%) doctors, 143 (59.33%) nurses, 5 (11.11%) lab technician and one servants. Majority of study subjects 389 (65.05%) knew the correct place of availability of PEP drugs i.e. ART clinic and ICCU, they were 193 (96.98%) doctors, 191 (79.26%) nurses, 4 (8.89%) lab technician and one servant.

Table 3: Knowledge of PEP drugs among study subjects

Drugs use for PEP	Study subjects				
	Doctors [n=199]	Nurses [n=241]	Lab technician [n=45]	Servants [n=113]	Total [n=598]
Name of Drugs					
Correct	173(86.93)	147(61.00)	01(02.22)	00(00)	321(53.68)
Incorrect	00(00)	00(00)	00(00)	00(00)	00(00)
Don't know	26(13.07)	94(39.00)	44(97.78)	113(100)	277(46.32)
Time interval of initiation					
Correct	114(57.29)	106(43.98)	04(08.89)	01(00.88)	225(37.63)
Incorrect	81(40.70)	87(39.10)	01(02.22)	00(00)	169(28.26)
Don't know	04(02.01)	48(08.02)	40(88.89)	112(99.12)	204(34.11)
Duration of Regimen					
Correct	157(78.89)	143(59.33)	05(11.11)	01(00.88)	306(51.17)
Incorrect	38(19.10)	49(20.33)	00(00)	00(00)	87(14.55)
Don't know	04(02.01)	49(20.34)	40(88.89)	112(99.12)	205(34.28)
Place of availability of PEP drugs					
Correct	193(96.98)	191(79.26)	04(08.89)	01(00.88)	389(65.05)
Incorrect	04(02.01)	02(00.83)	00(00)	00(00)	06(01.00)
Don't know	02(01.01)	48(19.91)	41(91.11)	112(88.12)	203(33.95)

All the study subjects [598 (100%)] were strongly agreed local preventive measures prevent HIV transmission and they were willing to take local preventive measures after exposure. Out of 598 study subjects, 412 study subjects were aware of reporting of injury, among them 406 (67.89%) had positive attitude about reporting of injury is helpful to start PEP as early as possible i.e. 195 (97.99%) doctors, 199 (82.57%) nurses, 11 (24.44%) lab technician and one servant. Remaining 6 study subjects were not agreed to this shown negative attitude about reporting of injury not much effective. About 398 study subjects were aware of use of drugs in PEP, out of that 395 (66.05%) were agreed that taking of full course of PEP is mandatory and three study subjects were not agreed PEP drugs are effective including two doctors and one nurse. Out of 598 study subjects, 349 study subjects were aware of testing of source patient and themselves is a part of PEP for HIV. Most of them 346 (57.86%) shown positive attitude toward testing for HIV in source patient and themselves. They were ready to get the source patient and themselves tested for HIV.

Table 4: Attitude of study subjects towards post-exposure prophylaxis for HIV

Attitude	Study subjects				
	Doctors n=199	Nurses n=241	Lab technicians n=45	Servants n=113	Total
Do you agree local preventive measures prevent HIV transmission?					
Yes	199(100)	241(100)	45 (100)	113(100)	598(100)
No	00 (00)	00 (00)	00 (00)	00 (00)	00(00)
Do you agree reporting of injury to appropriate authority is helpful?					
Yes	195 (97.99)	199(82.57)	11(24.44)	01(0.88)	406(67.89)]
No	03 (01.51)	03(01.25)	00(00)	00(00)	06 (01.01)
No response	01 (0.50)	39(16.18)	34(75.56)	112(99.12)	186(31.10)
Do you agree taking of full course of PEP drugs is mandatory?					
Yes	197(98.99)	192(79.67)	05(11.11)	01(0.88)	395(66.05)
No	02(01.01)	01(0.41)	00(00)	00(00)	03(0.50)
No response	00(00)	48(19.92)	40(88.89)	112(99.12)	200(33.45)
Do you agree source patient testing for HIV is effective?					
Yes	195(98.00)	147(61.00)	03(06.67)	01(00.88)	346 (57.86)
No	02(01.00)	01(0.41)	00(00)	00(00)	03(0.51)
No response	02(01.00)	93(38.59)	42(93.33)	112(99.12)	249(41.64)
Do you agree to get yourself tested for HIV is necessary?					
Yes	195(98.00)	147(61.00)	03(06.67)	01(00.88)	346 (57.86)
No	02(01.00)	01(0.41)	00(00)	00(00)	03(0.51)
No response	02(01.00)	93(38.59)	42(93.33)	112(99.12)	249(41.64)

Out of 279 study subjects who sustained sharps injury only 72 (25.81%) study subjects reported their injury to appropriate authority i.e. 22 (24.18%) doctors, 39 (29.55%) nurses, 3 (27.27%) lab technicians and 8(17.78%) servants. Out of 279 study subjects, 138 (49.46%) study subjects did testing for HIV on source patient they were 48 (52.75%) doctors, 63 (47.73%) nurses, 6 (54.55%) lab technicians, 21 (46.67) servants. Out of 138 source patients, 16 were HIV positive. Only 66 (23.66%) study subjects did testing for HIV on themselves including 21 (23.08%) doctors, 29 (21.97%) nurses, 6 (54.55%) lab technicians and 10 (22.22%) servants. Very few of them, 26 (9.32%) took PEP drugs for HIV, these were 10 (10.99%) doctors, 12 (9.09%) nurses, one lab technicians and three servants.

Table 5: Practice of PEP for HIV by study subjects after sharps injury

Procedures in PEP	Study subjects(n=279)				
	Doctors n=91	Nurses n=132	Lab technicians n=11	Servants n=45	Total n= 279
Reporting of the injury					
Yes	22(24.18)	39(29.55)	03(27.27)	08(17.78)	72(25.81)
No	69(75.82)	93(70.45)	08(72.73)	37(82.22)	207(74.19)
Testing done on source patient					
Yes	48(52.75)	63(47.73)	06(54.55)	21(46.67)	138 (49.46)
No	43(47.25)	69(52.27)	05(45.45)	24(53.33)	141(50.54)
Testing done on study subjects					
Yes	21(23.08)	29(21.97)	06(54.55)	10(22.22)	66(23.66)
No	70(76.92)	103(78.03)	05(45.45)	35(77.78)	213(76.34)
PEP drugs taken					
Yes	10(10.99)	12(09.09)	01 (09.09)	03 (06.67)	026 (09.32)
No	81 (89.01)	120(90.91)	10 (90.91)	42(93.33)	253(90.68)

DISCUSSION

In present study, all the hundred percent doctors, nurses, lab technicians aware about local preventive measure i.e. washing of site of injury with soap and water and 105 (92.92%) servants also aware of it. Maximum number in lab technician 19 (42.22%) said about squeezing out blood at the site of injury which is now not recommended. Bairy KL *et al.*⁹ reported that about 94% of doctors and 98% of nurses correctly stated that washing the site with soap and

water is the initial procedure. Singh RK *et al.*¹⁰ reported that regarding awareness of immediate measures following exposure to blood or body fluids or needle stick injuries, 151 (68.6%) knew that finger should not be put into mouth immediately after exposure, 206 (93.6%) knew that exposed part should be washed with soap and water. Out of 598 study subjects, majority of study subjects 563 (94.14%) knew that standard precaution can prevent transmission. About 151 (75.87) doctors, 15 (6.22%)

nurses, one lab technician and two servants had good knowledge regarding standard precaution while 48 (24.12%) doctors, 212 (87.96%) nurses, 37 (82.22%) lab technicians and 97 (85.84%) servants had average knowledge regarding standard precaution. About 35 (5.85%) study subjects had poor knowledge mostly they were lab technicians (15.55%). Sharma S *et al.*¹¹ found that 180 (94.7%) were aware about standard precautions, which was similar to our study. Dhaliwal B *et al.*¹² conducted a study in 217 and found that hundred percent of doctor had knowledge about universal precautions where as it was 80% in staff nurse and 82% in OT technician which was nearly similar to our study. Yadao SS *et al.*¹³ found that 72% knew that universal precaution can prevent transmission, yet 73% had perception that caring a HIV positive patient is high risk which was lower than our study. In the present study, 427 (71.40%) study subjects had knowledge about PEP for HIV. Hundred percent doctors aware about PEP for HIV. About 215 (89.21%) nurses and 12 (26.67%) lab technicians heard about PEP for HIV. Only one servant had awareness about PEP for HIV. Doctors and sisters gave correctly answer >75% of knowledge questions so they had adequate knowledge of PEP for HIV while lab technicians and servants gave correctly answer <75% of knowledge questions so they had inadequate knowledge of PEP for HIV. Alenyo R *et al.*¹⁴ reported majority (95%) of the respondents had heard about post exposure prophylaxis for HIV which was higher than our study. Owolabi R S *et al.*¹⁵ conducted a study and found that majority (97.0%) of the respondents have heard about PEP which was higher than our study. Gebreslase T *et al.*¹⁶ conducted a study and found that 98 (57.3%) of the respondents had good knowledge, 71 (41.5%) had fair knowledge and 2 (1.2%) had poor knowledge about PEP. Sarah O A *et al.*⁷ found that majority of respondents (83.3%) were aware of PEP which was higher than our study. Tesfaye G *et al.*⁸ found that in this study, all of the study subjects heard about HIV PEP. More than half of them (54.2%) could correctly identify the drugs used for HIV PEP. Uzochukwu *et al.*¹⁷ found that about 86% (111/129) had knowledge of PEP which was higher than our study. Shivaprakash G *et al.*¹⁸ reported most of the HCW had adequate knowledge about the PEP. Majority of HCW had heard about PEP and its guidelines. Nearly 80% of the questions were answered satisfactorily by doctors and surgeons compared to 65% of the total responses by dentists and nurses. Singh R K *et al.*¹⁰ found that about one-third (65.5%) of participants have heard of PEP for HIV which was lower than our study. In the present study, name of drugs recommended for PEP were known to 321 (53.68%) study subjects mostly they were doctors i.e. 173 (86.93%) followed by nurses i.e. 147 (61%). Only 225 (37.63%) knew that PEP started within 2 hours of

exposure. Most of the study subjects 306 (51.17) knew the correct duration of PEP i.e. 157 (78.89%) doctors, 143 (59.33%) nurses, 5 (11.11%) lab technician and one servants. Majority of study subjects 389 (65.05%) knew the correct place of availability of PEP drugs i.e. ART clinic and ICCU. Sarah O A *et al.*⁷ found that majority 182 (60.7%) of the respondents could name at least one of the recommended drugs for PEP and less than half of the respondents 46(15.3%) knew the correct duration for the use of HIV PEP. Tesfaye G *et al.*⁸ found that more than half of them (54.2%) could correctly identify the drugs used for HIV PEP. Shivaprakash G *et al.*¹⁸ reported mostly 87% of the HCW knew about the best time to start PEP and 62% were aware of the total duration of the regimen. Singh R K *et al.*¹⁰ found that 99 (45%) respondents knew when to initiate PEP for HIV and about half of the participants (52.7%) had knowledge regarding the duration of PEP to prevent HIV. In the present study, all the study subjects [598(100%)] were strongly agreed local preventive measures prevent HIV transmission and they were willing to take local preventive measures after exposure, 406 (67.89%) had positive attitude about reporting of injury is helpful to prevent transmission and 395 (66.05%) were agreed that taking of full course of PEP is mandatory. Most of them 346 (57.86%) shown positive attitude toward testing for HIV in source patient and themselves. Mathewos B *et al.*¹⁹ reported that majority of respondent 147 (75.4%) had good attitude toward the PEP. Tesfaye G *et al.*⁸ found that 60 (83.3%) of the study subjects had positive attitude toward PEP use. Uzochukwu *et al.*¹⁷ reported that 92.2% agreed that PEP reduces the risk of occupational HIV and 29% treated themselves with PEP on exposure aggressively. In present study, majority of study subjects i.e. 226 (81%) were washed site of injury with soap and water and then antiseptic applied, they were 81 (89.01%) doctors, 101 (76.52%) nurses, 8 (72.73%) lab technician and 36 (80%) servants. Blood was squeezed out by 20 (7.17%) study subjects including 2 (2.19%) doctors, one (9.09%) nurse and 6 (13.33%) servants. Squeeze out blood is now not recommended. Bhardwaj A *et al.*²⁰ found that the immediate post-exposure action taken was washing the injured part 14 (51.8%), medication 6 (23.1%), and two others (7.4%) such as informing senior staff. Chalya PL *et al.*²¹ reported majority of study subjects washed the site with soap and water 70 (55.6), cleaned the site with appropriate antiseptic agents 48 (38.1%) and squeezed the injured site 8 (6.3%).

CONCLUSION

Knowledge regarding post-exposure prophylaxis for HIV among study subjects is good among Doctors and Nurses and poor among lab technicians and servants. As the importance of PEP is included in medical curriculum,

incorporate this in nursing, technicians curriculum. There is need for establishing post exposure prophylaxis (PEP) centre which gives appropriate treatment, psychological support and counselling of affected HCWs.

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