

ORIGINAL RESEARCH ARTICLE

**Knowledge of Nurses on Post Exposure Prophylaxis of HIV in Medical Colleges of Chitwan District, Nepal**

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**ABSTRACT**

Post exposure prophylaxis of HIV is the only way to reduce risk of HIV after potential exposure to blood and body fluids. This study was conducted to assess the nurses' knowledge regarding post exposure prophylaxis of HIV in Medical Colleges of Chitwan district. Descriptive cross sectional research design was used for the study. Out of 425 nurses' 65 nurses' was selected by using simple random sampling technique from various wards of College of Medical Sciences Teaching Hospital (CMS-TH) & Chitwan Medical College Teaching Hospital (CMC-TH), Bharatpur-10, Chitwan. Data was collected using semi-structured questionnaire & data analysis was done on MS Excel. The finding of this study revealed that, out of 65 respondents, only 4(6%) respondents had good level of knowledge with mean knowledge score 23, 44(68%) respondents had fair level of knowledge with the mean knowledge score 17 and 17(26%) respondents had poor level of knowledge with the mean knowledge score 10. Regarding respondents' knowledge on different variables on PEP of HIV, respondents' have fair level of knowledge about meaning & indications of PEP, risk for transmission of HIV, management of needle prick injury, availability & initiation of PEP and side effects of PEP. Respondents' have poor level of knowledge about drug regimen & duration of PEP. Based on the findings of this study, it is concluded that respondents' have fair level of knowledge on PEP of HIV. So, nurses need to improve their knowledge on PEP of HIV through different training programme & in-service programme related to PEP of HIV, with more focus on drug regimen & duration of PEP, which will help to seek PEP of HIV treatment & prevent from transmission of HIV in workplace and reduce HIV burden.

**Key words:** Transmission of HIV, Knowledge of PEP of HIV, Chitwan Medical College.

**INTRODUCTION**

HIV/AIDS is a serious public health problem costing the lives of many people including health care workers. It is probably the most serious and causes the highest level of anxiety amongst health care workers (HCWs) in many countries. Each day thousands of healthcare workers (HCWs) around the world suffer accidental occupational exposures to blood borne pathogens.<sup>[1]</sup>

The World Health Organization estimates that 3 million percutaneous occupational exposures to blood or other body fluids occur in health care settings. CDC estimates 380,000 needle stick injuries in US hospital yearly. Globally 98 confirmed and 194 possible case of HCW infected of HIV occupationally. Ninety percent of occupational exposure across the world occurred in developing countries. Post exposure prophylaxis prevents 81% of sero conversion.<sup>[2]</sup> The estimated risk of HIV transmission is 0.3% after a needle stick injury and 0.09% after a

mucous-membrane exposure. Nurses are probably the most vulnerable of all the health care workers to get exposed to the occupational hazard of HIV infection.<sup>[3]</sup>

In developing countries, the risk of occupational transmission of blood-borne pathogens is increased by excessive handling of contaminated needles that result from unsafe practices like administration of unnecessary injections on demand, the reuse of non-sterile needles, capping needles, and the unregulated disposal of hazardous waste.<sup>[4]</sup> These are largely preventable through strict infection control, universal precautions, use of safe devices, proper waste disposal and prompt management of exposures including the use of post-exposure prophylaxis (PEP) for HIV (estimated to reduce HIV seroconversion by 81%)<sup>[2]</sup>

Post exposure prophylaxis (PEP) is currently the only way to reduce the risk of HIV infection in

someone exposed to the virus. It refers to the use of antiretroviral medications to help prevent HIV transmission. The rationale is that ARVs given immediately after exposure can stop the virus from disseminating in the body and establishing infection. The majority of occupational exposures do not lead to HIV infection. The risk of HIV transmission following skin puncture from a needle or other sharp object that was contaminated with a blood from a person with "documented" HIV infections is about 0.3%. The risk of HIV transmission is less with injuries sustained with solid bore (e.g. suture) needles than with hollow bore (e.g. blood drawing) needles. Similarly, the smaller the size of hollow bore needle, the less risk of HIV transmission. There have been rare reports of health workers who have become infected by exposure of mucous membrane (of eyes, nose or mouth) or abraded (broken) skin to HIV-infected material; the risk is estimated to about 0.09%. HIV is not transmitted through healthy intact skin. [5]

Nurses are probably the most commonly exposed health care workers to needle stick injuries and contact with infectious body fluids. It is important that nurses must have knowledge about how to protect themselves from this potential professional health hazard. Different studies are conducted on PEP of HIV in different countries but limited in Nepal. Many studies showed that nurses lag the knowledge on PEP of HIV. In Nepal little information is available about nurses' knowledge in this critical area. Hence it is necessary to undertake study to find out the existing knowledge regarding post exposure prophylaxis of HIV among nurses.

## MATERIALS AND METHODS

### Design of the Study

Descriptive cross-sectional research design was used to find out the nurses' knowledge regarding post exposure prophylaxis of HIV.

### Population and Setting

The population of the study was those 425 nurses who were working in Chitwan Medical College Teaching Hospital (CMCTH-161) and College of Medical Sciences Teaching Hospital (CMSTH-264), Bharatpur 10, Chitwan, Nepal, irrespective to their professional education level. Those nurses who were on leave or long vacation during data collection period was excluded from the study.

### Sampling

A total 65 nurses were selected by using probability simple random sampling method from Chitwan Medical College Teaching Hospital

(CMCTH-25) and College of Medical Sciences Teaching Hospital (CMSTH-40). The sample size was calculated by using following formula.

$$\text{Sample Size (n)} = \frac{t^2 \times p(1-p)}{m^2}$$

Where p = Estimated prevalence rate, m = Margin of error and t = Confidence level standard value 1.96

### Research Instrument

A semi-structured self administered questionnaire was developed by reviewing the related literature. The content validity of instrument was established through consultation with subjects' experts. Pre-testing of the instrument was done among 6 subjects (10% of the total sample size) in CMCTH who meets the study criteria but was excluded from the study sample. The internal consistency of instrument was established through test retest method by cronbach's alpha test. Necessary modification was done as per need.

### Data Collection Procedure

Before data collection administrative approval was obtained from concerned authority of Chitwan Medical College teaching Hospital and College of Medical Sciences, Bharatpur-10, Chitwan, Nepal. The respondents were informed about the purpose of the study. The verbal informed consent was obtained from all respondents. The data was collected from 1<sup>st</sup> June to 30 June, 2012 with the help of semi-structured self-administered questionnaires

### Data Analysis Procedure

The collected data was edited, organized and entered into MS Excel. Then data cleaning was done to increase an accuracy of data. The data was analyzed by using descriptive statistics in terms of the frequency, mean and percentage. The findings of the study were presented in tables.

## RESULTS

Socio-demographic characteristics of the respondents were shown in (Table 1). Out of 65 respondents, 58 (89%) respondents were from the age group 20 to 30 years, 52 (80%) respondents had completed PCL Nursing level, 31 (48%) respondents had 1 to 3 years of working experience followed by 20 (31%) below 1 year working experience and 14 (21%) respondents had 3 years and above working experience. Cent percent respondents had not received any training on post exposure prophylaxis of HIV. Fifty one (78%) respondents answered that self learning was their sources of information regarding PEP, followed by co-workers 31(48%) and working experience 7(11%) respectively. Respondents'

Knowledge on PEP: Meaning and Indications of PEP, Risk Conditions were shown in (Table 2). Thirty eight (59%) respondents answered the correct meaning of PEP as short term medical therapy to prevent HIV infection, 57(88%) respondents answered correctly that PEP is indicated for person who is exposed to HIV risk by needle sticks or cuts, followed by person who is exposed to HIV with blood or body fluids in broken skin 40(60%) and person who is exposed to HIV with blood or body fluids in eyes and mouth only 2(38%). 39(60%) respondents answered correctly that risk for transmission of HIV is high in case of injuries from blood drawing needle used in HIV infected person, 52(80%) respondents answered correctly that risk for transmission of HIV is low in case of superficial injuries with suture needle used in HIV infected person. 30(46%) respondents and 31(48%) respondents answered correctly that risk percentage of getting infection after needle prick injuries and mucous membrane exposure is 0.3% and 0.09% respectively. Forty two (65%) respondents correctly answered that peritoneal fluid is considered as high risk body fluids for transmission of HIV, followed by cerebrospinal fluid 34(52%), synovial fluid 32(49%) and pleural fluid 25(38%) respectively. Respondents' Knowledge on PEP: management of needle prick injuries was shown in (Table 3). Thirty one (48%) respondents answered correctly that the first-aid procedure after needle prick injury is to wash the site immediately with soap and water, 47 (72%) respondents answered that physician is a first contact person after needle prick injury and 44(68%) respondents correctly responded that

HIV test should be done at baseline and at 6 weeks, 3 & 6 months after exposure. Forty Nine (75%) and 45(69%) respondents respectively answered correctly that PEP is available with free of cost at ART center. Only 39(60%) respondents knew that PEP initiation is best within 2 hours of needle prick injuries and 29(45%) knew that PEP is given for 28 days. Respondents' knowledge scores on PEP of HIV were shown in (Table 4). Respondents' level of knowledge on PEP was shown in (Table 5). Respondents' level of knowledge is measured by calculating the total possible score in PEP of HIV questions & classified into 3 categories : poor knowledge (below 50 percentile), fair knowledge (50-75 percentile) and good knowledge (above 75 percentile). Majority (68%) of the respondents had fair level of knowledge on PEP of HIV. Respondents' exposure to HIV risk conditions and practice of PEP was shown in (Table 6). Eighteen (28) respondents were exposed to HIV risk conditions but nobody took the services of PEP.

**Table 1: Respondents' Socio-Demographic Characteristics (n=65)**

Variables	Frequency (Percent)
Age Group	
Below 20 Years	6 (9)
20-30 Years	58(89)
30 Years & above	1(2)
Professional Qualification	
PCL Nursing	52(80)
Bachelor in Nursing	13(20)
Total working experience	
Less than 1 Year	20(31)
1 - 3 Years	31(48)
3 Years & above	14(21)
Hospital protocol about PEP of HIV	
Yes	9(14)
No	56(86)

Mean age  $\pm$  SD = 23  $\pm$  2.77; Mean experience  $\pm$  SD = 2  $\pm$  1.94

**Table 2: Respondents' Knowledge on PEP: Meaning and Indications of PEP, Risk Conditions (n=65)**

Variables	Frequency (Percentage)
PEP is a short term medical therapy to prevent HIV infection	38(59)
Indications of PEP**	
Person exposed to HIV risk by needle sticks or cuts	57(88)
Person exposed to HIV with blood or body fluids in eyes and mouth	25(38)
Person exposed to HIV with blood or body fluids in broken skin	40(60)
High risk for transmission of HIV as injuries from blood drawing needle	39 (60)
Low risk for transmission of HIV as superficial injuries with suture needle	52(80)
Risk percent of getting HIV infection after needle stick injury as 0.3%	30 (46)
Risk percent of getting HIV infection after mucous membrane exposure as 0.09%	31 (48)
High risk body fluids as**	
Synovial fluid	32(49)
Peritoneal fluid	42(65)
Pleural fluid	25(38)
Cerebrospinal fluid	34(52)

\*\*Multiple Responses

**Table 3: Respondents' Knowledge on PEP: Management of Needle Prick Injuries (n=65)**

Variables	Frequency (Percentage)
Washing the site with soap and water is first aid procedure after injury	31 (48)
Physician is the first contact person after needle prick injuries	47(72)
HIV test can be done at baseline and at 6 weeks, 3 months and 6 months	44(68)
PEP is available with free of cost	49(75)
PEP is available at ART center	45(69)
PEP initiation is best within 2 hours of needle prick injuries	39(60)

PEP initiation is ineffective beyond 72 hours of injuries	24(43)
2 drug regimen is commonly used for PEP	43(66)
Common drugs are Zidovudine and Lamivudine	13(20)
Zidovudine 300mg and Lamivudine 150mg is used in common drug regimen	14(22)
PEP is given for 28 days	29(45)

**Table 4: Respondents' Score on Knowledge of PEP of HIV (n=65)**

Variables	Mean± SD	Percent of Mean Score	Maximum Possible Score
Meaning & Indication of PEP	2.43±1.02	60.75	4
Risk for transmission of HIV	4.35±2.10	54.37	8
Management of Needle Prick injury	1.89±0.85	63.0	3
Availability & Initiation of PEP	2.48±0.95	62.0	4
Drug regimen & Duration of PEP	2.15±1.18	43.0	5
Side effects of PEP	2.31±0.82	57.75	4
Total	15.62±6.92	55.78	28

**Table 5: Respondents' Level of Knowledge on PEP of HIV (n=65)**

Level of Knowledge	Frequency (Percent)	Mean Score
Poor (< 50% )	17(26)	10
Fair (50% - 75%)	44(68)	17
Good (>75 %)	4(6)	23

**Table 6: Respondents' Exposure to HIV Risk Condition & Practice of PEP**

Variables	Frequency (Percent)
Exposure to HIV risk condition in work place (n=65)	
Yes	18(28)
No	47(72)
Type of risk condition (n=18)	
Exposure to blood	6(33)
Exposure to body fluid	4(22)
Needle prick injury	8
Practice of PEP(n=18)	
Yes	0
No	18(100)
Reason for not using post exposure prophylaxis of HIV (n=18)	
Lack of awareness of the existence of PEP service /protocol	1(5)
Lack of support and encouragement to report	5(28)
Not necessary	12(67)

## DISCUSSION

Out of 65 respondents, 89% of respondents were between the age of 20 to 30 years and the means age of the respondents were 23± 2.77 years. Eighty percent of respondents had completed PCL Nursing level. Forty-eight percent of respondents had 1 to 3 years of working experience and mean year of work experience had been 2± 1.94 years. Cent percent respondents had not received any training on post exposure prophylaxis of HIV. Eighty- six percent of respondents were aware that hospital hasn't any protocol about PEP of HIV. Seventy-eight percent of respondents answered that self learning was their sources of information regarding PEP followed by co-workers (48%), working experience (11%) & mass media (2%). The findings revealed that 59% of respondents had knowledge on meaning of PEP as short term medical therapy to prevent HIV infection. This finding is supported by a study of Alenyo, Fualal & Jombwe which showed that 61% of respondents' believed that PEP is able to reduce the risk of HIV transmission [6]. Sixty percent of respondents had knowledge that risk for transmission of HIV is high in case of injuries from blood drawing needle used in HIV infected person. This finding is supported by a study of

Foster, Lee, MCGaw & Frankson which revealed that 63% of respondents' identified needles for drawing blood were the highest risk for transmission of infections [7]. Forty six percent of respondents had knowledge that 0.3% is the risk percentage of getting HIV infection after needle stick injury & 48% of respondents had knowledge that 0.09% is the risk percentage of getting HIV infection after mucous membrane exposure. This finding is higher than study finding of Bairy et al where 25% of nurses were aware of correct risk of transmission of HIV at work place. [8] In the present study, 65% of respondents had knowledge that high risk body fluids for transmission of HIV is peritoneal fluid followed by cerebrospinal fluid (52%), synovial fluid (49%) and pleural fluid (38%) respectively. This finding is supported by a study of Foster, Lee, MCGaw & Frankson which showed that, participants considered the following fluids, not blood stained, high risk for HIV transmission: breast milk (79%), saliva (14%), urine (27%), pleural fluid (53%), CSF (55%), synovial fluid (37%), feces (27%), peritoneal fluid (53%) and vomitus (21%). [7]

In the present study 48% of respondents' had knowledge about the fact that washing the site

immediately with soap and water is the first-aid procedure after needle prick injury. This finding is supported by a study of Baheti, Tullu & Lahiri which showed that 40.8% nurses had knowledge about the fact that the exposed site must be immediately washed with soap and water<sup>(9)</sup>. In contrast to this study another study conducted by Bairy et al showed that 98% nurses had knowledge that the first-aid procedure after needle prick injury is to wash the site with soap and water<sup>(8)</sup>. In the present study, 60% of respondents had knowledge that the best time for initiation of PEP is within 2 hours of exposure, 43% of respondents' had knowledge that PEP initiation will be ineffective after 72 hours of exposure. This finding is supported by a study of Alenyo, Fualal & Jombwe which showed that 51.8 % of respondents' had knowledge about best time for initiation of PEP<sup>(6)</sup>. Similarly this finding is also supported by a study of Avachat, Phalke & Dhumale which showed that, 47% of respondents' knew when post exposure prophylaxis should start<sup>(10)</sup>. The finding of the present study revealed that, 75% of respondents had knowledge that PEP of HIV is available with free of cost, 69% of respondents had knowledge that PEP of HIV is available in Anti-Retroviral Therapy (ART) Center and 45% of respondents had knowledge that exact duration of PEP is 28 days. This finding is supported by a study of Bairy et al which showed that 67% respondents' had knowledge about availability of drugs and 15% of nurses were aware of the exact duration of PEP.<sup>(8)</sup>

In the present study, 66% of respondents had knowledge that PEP consists of 2 drugs regimen is commonly used drug regimen. Only 20% of respondents had knowledge that Zidovudine and Lamivudine is the common drugs regimen used in PEP. In concerning to doses of common drug regimen of PEP, only 22% of respondents had correctly identified the drugs used are Zidovudine 300mg and Lamivudine 150mg. This finding is supported by a study of Owolabi et al which showed that 30.9% of respondents' could correctly identify the drugs used and duration of PEP.<sup>(11)</sup>

Regarding respondents' opinions on causes of exposure to HIV risk, 86% of respondents' perceived lack of protective barrier followed by negligence (77%), lack of knowledge on standard precautions (74%) & high work load (25%). This finding is supported by a study of Bosena et al which showed that the perceived causes of exposure were; high workload 44.3%, lack of

protective barriers 33.3% and lack of knowledge on standard precautions 17.8%.<sup>(11)</sup>

Concerning respondents' exposure to HIV risk condition & practice of PEP, only 28% of respondents reported that they had exposed to HIV risk condition in their work place. Among 18 exposed to HIV risk condition, 45% of respondents sustained needle prick injury, 33% of respondents exposed to blood and 22% of respondents exposed to body fluids. However, those exposed reported that they did not use PEP. This finding is supported by a study of Bosena et al which showed that out of 174 who were exposed to risk of HIV, 60.3% sustained needle prick/cut by sharps, 44.3% to blood and 39.1% exposed to patients' body fluid.<sup>(11)</sup>

### CONCLUSION

Based on the findings and discussions of the study, it is concluded that nurses working on medical colleges of Chitwan district had fair level of knowledge about PEP of HIV. The finding of this study revealed that, out of 65 respondents, only 4(6%) respondents had good level of knowledge, 44(68%) respondents had fair level of knowledge and 17(26%) respondents had poor level of knowledge. Regarding respondents' knowledge on different variables on PEP of HIV, respondents' have fair level of knowledge about meaning & indication of PEP, risk for transmission of HIV, management of needle prick injury, availability & initiation of PEP and side effects of PEP. Respondents' have poor level of knowledge about drug regimen & duration of PEP. Therefore, very few respondents' had good level of knowledge, majority of the respondents' had fair level of knowledge & few respondents' had poor level of knowledge. So, nurses need to improve their knowledge by self learning, by participating on training programme & in-service programme on PEP of HIV, more focus should be done on drug regimen & duration of PEP, which will help to seek PEP of HIV treatment & prevent from transmission of HIV in workplace and reduce HIV burden.

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