

KNOWLEDGE ON POST EXPOSURE PROPHYLAXIS OF HIV AMONG NURSES OF A PRIVATE HOSPITAL

Deepika Khadgi^{1*}, Pooja Shah², Anju Mahato³, Karishma Khadgi⁴

Affiliation

1. Assistant Professor/ Department of Adult Health Nursing, TU, IOM Biratnagar Nursing Campus, Biratnagar, Nepal.
2. Incharge/Intensive Care Unit, Golden Hospital Pvt Ltd, Nepal
3. Instructor/ Department of Adult Health Nursing, TU, IOM Biratnagar Nursing Campus, Biratnagar, Nepal
4. Instructor/ Department of Adult Health Nursing, TU, IOM Biratnagar Nursing Campus, Biratnagar, Nepal

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* Corresponding Author

Ms Deepika Khadgi

Assistant Professor

Department of Adult Health Nursing, TU, IOM

Biratnagar Nursing Campus, Biratnagar, Nepal

Email: deepkhadgi@gmail.com

ORCID: <https://orcid.org/0000-0001-6416-1573>

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ABSTRACT

Introduction

There are many effective prevention interventions available for those experiencing occupational exposure, and post exposure prophylaxis (PEP) is one of them. Different studies worldwide have shown low utilization of PEP for HIV due to lack of adequate knowledge.

Objective

The purpose of this study was to assess the knowledge on PEP of HIV among nurses.

Methodology

Descriptive cross-sectional research design was used and all the 130 nurses working in a private hospital of Biratnagar were the sample. Self-administered semi-structured questionnaire was used. Descriptive statistics as percentage, mean, median and standard deviation were used to analyse the data.

Result

Almost all of the nurses knew the meaning of PEP and the majority were aware about components, indications and best time for initiating PEP after exposure. Less than half had knowledge about appropriate treatment regimen, antiretroviral drugs used for PEP, PEP drugs contraindicated during pregnancy, effectiveness of PEP and duration of protection by PEP. Findings also revealed that only one-third of the nurses (35.8%) had adequate knowledge on PEP of HIV.

Conclusion

In least developed and developing countries like Nepal, healthcare workers including nurses have to work in resource-limited settings, putting themselves at higher risk of contracting different blood borne infections, including HIV, a disease without cure so far. Thus the findings reflect the need for their in-service awareness program and the integration of content in the pre-service curriculum on PEP of HIV for the nurses who are at risk for occupational exposure.

KEYWORDS

HIV, PEP, Knowledge, Nurses



INTRODUCTION

Globally the health status of many nations has been strongly impacted by HIV. At the end of 2019, there were approximately 38.0 million people worldwide living with HIV/Acquired Immune-Deficiency Syndrome (AIDS) with 1.7 million new infection in 2019¹ and 30,646 people were in Nepal, out of which 244 were in Eastern region according to National Centre for AIDS & STD control (NCASC).² It is a serious public health problem costing the lives of many people including health care workers. Each day thousands of healthcare workers (HCWs) around the world suffer accidental occupational exposures to blood borne pathogens as HIV.

There is no cure for HIV so far and it progressively destroys the body's immune system to fight infections and certain cancers. However, many effective prevention interventions are available; post exposure prophylaxis (PEP) is one of the preventive interventions for those experiencing accidental needle stick injuries.³ But most of the healthcare workers, including nurses, do not have adequate knowledge about PEP of HIV which makes them more at risk of acquiring HIV which could have been prevented. Different studies among medical/ health science students and healthcare workers revealed only less than 40% had adequate knowledge,⁴⁻⁸ 16.8% were in need of HIV PEP and of these 16.8%, only 48.6% took PEP.⁴

The prevalence of occupational exposure among health care workers is high with low utilization of HIV PEP. Aminde et al. has claimed that healthcare providers practicing in high burden areas face enormous risk of occupational exposure to HIV, with little or no knowledge of appropriate post-exposure interventions and lack of insight of the benefits of post-exposure prophylaxis.⁹ In Tirunelveli medical college, 89% of medical, nursing and paramedical students considered themselves to be at risk of acquiring HIV at work, with 46 (23%) having experienced an exposure in the past. Of those exposed, only 21 (45.7%) received PEP.¹⁰ In under-developed and developing countries like Nepal, healthcare workers including nurses have to work in resource-limited settings, putting themselves at higher risk of contracting different blood borne infections as HIV.

Out of 239 HCWs interviewed from Singida District Council of Tanzania, 121 (50.6%) experienced occupational exposure, mostly to blood splash 57 (47.1%) and needle stick injuries 45 (37.2%). Among the 121 exposed participants, only 32 (26.4%) started HIV PEP after testing and only 28 (23.1%) completed HIV PEP.⁶ This reflects the high prevalence of occupational exposure but low utilization of PEP.

Infections acquired through the occupational route are largely preventable through strict infection control, universal precautions, use of safe devices, proper waste disposal, immunization against hepatitis B virus, and prompt management of exposures including the use of PEP for HIV.¹¹ Thus, to prevent infection, those at higher risk of HIV exposure, including nurses, must be equipped with adequate PEP knowledge. Lack of knowledge on HIV amongst nurses has a crucial impact on their daily work.

Also, this has potential influence on their safety and quality of care provided to people with HIV. With a high number of HIV positive clients in eastern region of Nepal and nurses being at high risk of occupational transmission of HIV, since they are exposed to the patients 24 hours a day, it becomes increasingly important to assess the knowledge of nurses regarding PEP of HIV.² Thus the study was conducted with the objective to assess the knowledge on post exposure prophylaxis of HIV among nurses in a private hospital of Biratnagar.

METHODOLOGY

Descriptive cross-sectional research design was used with the aim to assess the knowledge on post exposure prophylaxis of HIV among nurses of a private hospital at Biratnagar. The study was conducted at Golden Hospital, a private hospital of Biratnagar, Nepal out of total 15 private hospitals January-February, 2018. Population was the registered nurses (ANMs/ Staff Nurse/ BSC/ BN) working in the hospital as nurses are a vulnerable group to occupational exposure to HIV. Census of 140 nurses working in the hospital was the sample for the study though the estimated sample size was 113 which was calculated using the Cochrane's formula of z^2pq/d^2 with proportion of nurses having adequate knowledge being 68%.⁵ Nurses who had already received training related to HIV and those who were on long leave were excluded from the study.

For data collection, a self-developed questionnaire, based on the objectives of the study by extensive literature search, consultation with experts and feedback from peers was used. Instrument consisted of two distinct sections, part I consisted of semi-structured items to explore the socio-demographic information of the respondents whereas part II consisted of structured items related to knowledge of nurses on post-exposure prophylaxis of HIV. Content Validity of the tool was established qualitatively by the subject experts' feedback and literature search. Questionnaire was developed in English language and translated to Nepali language by consultation with the English subject expert. The translated tool was then again back translated to English by the consultation with the same English language expert. Pretesting was done on 10% of sample size working in another private hospital for corrective purpose and modification was done according to the need. This population was not included in final data analysis.

Data was collected after getting the ethical clearance from Research Committee, Biratnagar Nursing Campus and approval from the concerned authority of Golden hospital. Written informed consent was taken from each respondent prior to the study. Privacy, confidentiality of information and autonomy of participation was maintained throughout and after the study by using information for research purposes only. They were given freedom to discontinue their participation at any point during the data collection period. Clarification about the study was given at any time before, during and after study.



Data was checked and organized every day after collection for maintaining completeness. Collected information was entered in SPSS, coded and was analyzed by using Statistical Package for Social Sciences (SPSS) version 16.0 for analysis. Descriptive statistics as percentage, mean, median, standard deviation was used and analyzed data was presented in the tabular form and in the text.

Scoring Criteria:

Knowledge score was calculated on the basis of 22 multiple choice and multiple response questions related to knowledge on PEP of HIV. Each correct answer carries 1 mark. Altogether, the total score consists of 31 marks which is then converted into percentage.

Adequate knowledge: ³ 60% i.e. greater than or equals to 18.6 marks. **Inadequate knowledge:** <60% i.e. below 18.6 marks.

RESULTS

Socio-Demographic Variables

About three-fourth of the respondents (73%) belonged to the age group of 20-25 years with mean age 21.81 years and standard deviation 1.62. More than three fourth (83.9%) were staff nurses and 73.7% had work experience of 1-3 years. Surprisingly, none of them had received in-service education/training on HIV/AIDS. Half of them (50.4%) had known about PEP from their co-workers followed by mass media (49.6%).

Table 1 shows that almost all of the respondents (99.3 %) had knowledge about the meaning of HIV, routes of transmission and risk procedures that may transmit HIV. Only 26.3% were aware about the proportionate risk of transmission of HIV via needle stick injury. Similarly, 48.2% knew the sources of occupational exposure. None of the respondents had a history of accidental occupational exposure to HIV.

Correct responses	Frequency	Percentage Definition of HIV
Virus that attacks immune system of host	136	99.3
Routes of transmission*		
Blood transfusion	137	100
Sharing needle	137	100
Risk behavior to be avoided	135	98.5
Sharing needle		
Procedures at risk of HIV transmission*		
Giving injections and handling of body fluids	137	100
During delivery	137	100
Proportionate Risk of transmission via needle stick injury		
0.3%	66	48.2
Sources of occupational exposure		
All (blood, CSF, pleural fluid)	36	26.3

*Multiple Response (each correct response considered as 100%)

Table 2 shows that most of the respondents (98.5%) were familiar with the definition of PEP of HIV, majority of them (99.3%) had understood PEP as provision of short

term ARV drugs while only 13.9% knew counseling and risk assessment is also the component of PEP. More than half (62.8%) participants knew that PEP is indicated if the patient HCWs are exposed to is HIV positive and PEP is ineffective if initiated after 72 hours of exposure. Only 33.6% of nurses knew about the Golden hour for PEP initiation. Majority were aware about immediate action to be done after needle stick injury and the person to be consulted immediately after exposure. Likewise, about three-fourth participants knew that the ART center was available at Biratnagar.

Correct responses	Frequency	Percentage
Definition of PEP	135	98.5
Selected ARV drugs used to prevent transmission of HIV after occupational or non occupational exposure		
Components of PEP *		
Counseling and risk assessment	19	13.9
HIV testing based on informed consent	28	20.4
Risk assessment	29	21.2
Provision of short term ARV drugs	136	99.3
Follow up & support	30	21.9
Indication for PEP	86	62.8
If the patient HCWs are exposed to is HIV positive		
PEP initiation is ineffective	88	64.2
After 72 hrs		
Golden hour for PEP initiation	46	33.6
<2 hours		
Immediate action to be done after needle stick injury	127	92.7
Wash the site with soap and running water		
Person to be consulted immediately after exposure	94	68.6
ART counselor		
Availability of ART Center at Biratnagar	106	77.4
Yes		

*Multiple Response (each response considered as 100%)

Table 3 shows that only one fourth of respondents (26.3%) knew the basic regimen, 31.4% knew the PEP ARV drug contraindicated during pregnancy, more than half (77.4%) were aware that PEP can be administered to children also and 43.9% knew the exact effectiveness of PEP in preventing HIV. Majority of the respondents were aware that the interventions to be done for further management of exposure where taking medications as per regimen was the highest (65.0%) response followed by checking HIV status of exposed people (64.2%) and follow up on a regular basis (57.7%). Only 43.1% respondents knew that PEP provides protection for particular exposure only & half of them (50.4%) were aware about the 28 days regimen of PEP of HIV.

Variables	Frequency	Percentage
Basic regimen of PEP		
Zidovudine + Lamivudine	36	26.3
Lamivudine + Nevirapine	56	40.9
Zidovudine + Nevirapine	32	23.4
Zidovudine + Efavirenz	13	9.5



PEP ARV drug contraindicated during pregnancy		
Efavirenz	43	31.4
Nevirapine	35	25.5
Zidovudine	29	21.2
Lamivudine	30	21.9
PEP can be administered to child		
Yes	106	77.4
No	31	22.6
Effectiveness of PEP in preventing HIV		
99%	60	43.8
90%	47	34.3
88%	22	16.1
85%	8	5.8
After immediate management, interventions for further management of exposure*		
Check HIV status of source person	46	33.6
Check HIV status of exposed person	88	64.2
Take medications as per regimen	89	65.0
Follow up on regular basis	79	57.7
Whole body check up	58	42.3
Duration of protection by PEP		
Particular exposure only	59	43.1
6 months	50	36.5
1 year	13	9.5
Lifelong	15	10.9

*Multiple Responses (each response considered as 100%)

Table 4 depicts less than half of the respondents (35.8%) had adequate knowledge of post exposure prophylaxis of HIV.

Variables	Frequency (f)	Percentage (%)
Adequate knowledge	49	35.8
Inadequate knowledge	88	64.2
Total	137	100.0

DISCUSSION

Workplace exposure to HIV and similar other infections has been a great threat for HCWs, moreover, nurses are comparatively at the higher risk.¹² Also, nurses working at high burden areas have greater risk of transmitting HIV thus emphasizing the need for adequate knowledge on PEP.

Almost all of the respondents (99.3%) had known the meaning of HIV while all of them (100%) knew the routes of transmission and risk procedures that may transmit HIV. This might be due to the transformation of HIV infection into a chronic disease that has its implications across all health care settings. A survey amongst nurses of BPKIHS, Nepal¹¹ showed that all the respondents (100%) had knowledge about the common modes of HIV transmission and procedures at risk of HIV transmission to health care workers (giving injections, handling body fluids, conducting delivery). This might be due to the extensive awareness program on HIV.¹⁸ Only one-fourth (26.3%) of nurses were

aware about proportionate risk of HIV transmission via needle stick injury. None of them had a history of accidental occupational exposure to HIV. To provide quality care to the people with or at high risk of HIV, every nurse should be knowledgeable about prevention, treatment and testing of the disease.

Almost all (98.5%) had knowledge about the meaning of post exposure prophylaxis of HIV which is similar to different studies^{14,15} which revealed 97.4% and 66.0% respectively knew the meaning of PEP. Almost all of the nurses (99.3%) were aware of PEP as provision of short term ARV drugs while only 13.9% knew that counseling and risk assessment is also the component of PEP. More than half (62.8%) knew that PEP is indicated if the patient, HCWs are exposed to, is HIV positive and PEP is ineffective if initiated after 72 hours of exposure whereas only 33.6% of nurses knew about the Golden hour for PEP initiation. These findings are in accordance with many other literatures.¹³⁻¹⁵ Most of them (92.7%) were aware about immediate action to be done after needle stick injury which is similar to findings of similar other studies^{14,11} but contradicts with the others.^{15,16} Study revealed that 68.6% knew about the person to be consulted immediately after exposure. Likewise, about 3/4th knew that the ART center was available at Biratnagar.

Knowledge on the basic regimen of PEP has been found to be low among nurses¹⁵ and the similar finding was revealed by this study where only 26.3% of respondents knew the basic regimen as well as only less than half (31.4%) knew the PEP ARV drug contraindicated during pregnancy. It is important to have an understanding of emerging trends in management of the HIV patients and the HCWs with accidental occupational exposure.

More than half (77.4%) were aware that PEP can be administered to children also and 43.9% knew the exact effectiveness of PEP in preventing HIV.¹⁵ Majority of the respondents were aware that the interventions to be done for further management of exposure where taking medications as per regimen was the highest (65.0%) response followed by checking HIV status of exposed people (64.2%) and follow up on a regular basis (57.7%). Only 43.1% respondents knew that PEP provides protection for particular exposure only & half of them (50.4%) were aware about the 28 days regimen of PEP of HIV.¹⁵⁻¹⁷ However, in contrast, it was concluded that most of the nurses were aware of the 28 days PEP regimen.^{8,14} Dhital et al. had acclaimed that only few nurses knew PEP is 99% effective in preventing HIV¹⁵ and the present study also showed the similar result (only 43.8% were aware about effectiveness of PEP) whereas another study had found that 60.5% had correct knowledge.⁵ Majority of the nurses (77.4%) knew that the ART center is available at Biratnagar.

Many authors have concluded that only few nurses have adequate overall knowledge on PEP of HIV^{16,4} which is in support of this study where only 35.8% of nurses had overall adequate knowledge. In contrast, a study revealed that 83.3% had adequate knowledge level on PEP.⁷



CONCLUSION

The findings of the study conclude that only one-third of the respondents had adequate level of knowledge on the PEP of HIV. This reflects that they are unlikely to utilize PEP in case of accidental exposure and may develop a fatal infectious state thus deteriorating the quality of life of oneself and family. Due to this fear of contracting HIV, there may be compromise in the quality of care provided to the people with HIV. Adoption of a simple intervention of immediate PEP after occupational exposure by nurses can prevent a huge loss of human resources for the health of the nation, member of a family and finally the life of the individual oneself.

RECOMMENDATION

As nurses are vulnerable for occupational transmission of HIV, it is important to impart adequate knowledge about

PEP of HIV so that occupational transmission can be prevented. Knowledge of PEP for HIV can be integrated in the nursing curriculum itself or during an in-service training.

LIMITATION OF THE STUDY

Study has been conducted in a single setting, so it might not be generalized.

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