International Journal of Health Sciences and Research
www.ijhsr.org ISSN: 2249-9571

*Original Research Article*

# Knowledge and Practices on Post Exposure Prophylaxis (PEP) of HIV among Nurses Working in Medical-Surgical Units of BPKIHS, Nepal

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*Received: 14/03/2016* *Revised: 21/04/2016* *Accepted: 22/04/2016*

## ABSTRACT

**Background:** Hospital staffs, especially the nurses who have direct contact with patients and body substances are at higher risk of occupational hazards.
**Objectives:** To assess the knowledge and practice regarding post exposure prophylaxis of HIV among the nurses and to find out association between Knowledge and selected demographic variables.
**Methodology:** Descriptive study design was adopted for the study. The study was conducted among the nurses working in medical-surgical units of BPKIHS. Forty Nurses working in medical and surgical units of BPKIHS were selected by stratified random sampling technique. Data were collected by using semi structured questionnaire. Descriptive statistics (Percentage, Mean and SD) was used for describing demographic Profile and inferential statistics (Chi-squire) was used to find out association.
**Result:** Majority of the respondents fall in the group of 20-25 years, mean age=24.28, 87.2 % were staff nurses. Regarding the knowledge about PEP, 89.7 % knew the meaning of post exposure prophylaxis of HIV. 82.9 % had the knowledge regarding the first aid for an occupational exposure. Regarding the practice of PEP, only 15.4 % of respondents' seeked help from the health care provider after exposure, only 17.9 % informed to the in-charge on duty after exposure, and only 12.8% received ARV after exposure.
**Conclusion:** Knowledge regarding PEP was found to be satisfactory in majority of respondents but practice was found to be less and there is no association between the knowledge and practice of PEP of HIV with demographic variables.

***Key words:*** Knowledge, Practices, Post Exposure Prophylaxis (PEP), Nurses.

## INTRODUCTION

Kofi Annan the former president of united nation organization said "The fight against HIV/AIDS requires leadership from all parts of government and it needs to go right to the top. AIDS is far more than a health crisis. It is a threat to development itself." [1]

The global AIDS epidemic continues to grow and there is concerning evidence that some countries are seeing resurgence in new HIV infection rates which were previously stable or declining. [2]

HIV/AIDS is a major public health concern in Nepal, since its first case was reported in 1988. Currently, Nepal is depicted from a "low prevalence" to a "concentrated epidemic" with the adult prevalence rate of 0.47%.According NCASC 16th July 2010 there are total 16,138 PLWHA in Nepal with 193 case reports in same month. It also reveals the estimated no of people living with HIV/AIDS to be around 69,790. This explains the magnitude of this disease which is growing day by day being truly a national epidemic. [3]

PEP is a medical response given to prevent the transmission of pathogens after potential exposure. PEP for HIV refers to a set of comprehensive services to prevent HIV infection in exposed individuals. These services include, first aid care, counseling and risk assessment, HIV testing based on informed consent, and depending on risk assessment, the provision of short term (28 days) antiretroviral (ARV) drugs, with follow up and support. [4]

The use of post exposure prophylaxis against HIV infection dates back to the early 1990s, when only limited antiviral treatment for chronic infection was available. Prophylaxis was primarily used after occupational exposures - exposures of health care workers to HIV-infected blood and body fluids, usually through needle stick injuries or contact with splashed blood or body fluids. A case-control study in 1997 showed that health care workers who received zidovudine after needle stick exposures were 81% less likely to undergo seroconversion to positivity for HIV. [4]

The application of PEP should be evaluated following an occupational exposure with the potential for HIV transmission, based on the route of exposure, the materials involved, and the evaluation of the source patient. After the evaluation, health care workers should provide counseling on risk-reduction behavior to the exposed person regardless of how the individual was exposed, and of whether or not antiretroviral (ARV) drugs will be recommended for PEP, as such, counseling can reduce the risk of future exposures. It should be made clear during the counseling session that ARV is not mandatory. [4]

After initial evaluation and counseling if ARV is to be given, it should be initiated within hours of exposure - ideally within 1 hour and not later than 72 hours after exposure for its maximum efficacy and should not be delayed while waiting for tests results. [5]

Routine follow-up should be organized in advance for all personnel who have had occupational exposures to HIV, regardless of whether or not they receive PEP. Those who are prescribed PEP are usually reviewed at 1-2 weeks in order to review side-effects, toxicity and adherence. Follow-up testing for HIV, and for other blood-borne viruses if necessary, should occur at 4-6 weeks, 3 months and 6 months. Although cases of delayed seroconversion have occurred, the vast majority of seroconversions will occur within 6 months and this is now the standard follow up interval. However, patients should be aware of the need to seek medical advice if they experience symptoms of primary HIV infection such as fever, rash, Lymphadenopathy or flu-like symptoms. There have been case reports of HIV seroconversion. The misconception exists that the healthcare industry is “clean” and without hazard, when in fact the chemical and blood-borne exposures encountered can be career- and life-ending. [6]

The estimated percutaneous exposures occur annually among 35 million HCW globally is 3 million with over 90% occurring in resource-constrained countries. As a consequence of these exposures, an estimated 66,000 hepatitis-B, 16,000 hepatitis-CS, and up to 1000 HIV infections occur each year. [7]

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 post-exposure prophylaxis (PEP) for HIV. [8]

Due to lack of personal protective equipment (PPE), availability of safe devices, proper disposal of sharps and waste, high demand for injections and lack of PEP of HIV services place HCW in settings like ours at high risk for occupational exposures and HIV infection. [9] So it is essential to expand the better understanding of this preventive strategy (PEP of HIV) in resource-constrained settings, like Nepal.

With increasing number of HIV positive clients in eastern region of Nepal and nurses being at high risk to occupational transmission of HIV since they are exposed to the patients 24 hours a day, it becomes increasingly important to assess the knowledge, attitude and practice of Nurses regarding PEP of HIV. Hence, the investigator felt need to assess the knowledge and attitude and practice regarding PEP of HIV among the nurses.

**Objectives:** The present study was undertaken to assess the Knowledge, practice regarding post exposure prophylaxis of HIV among the nurses working in Medical-Surgical Nursing units of BPKIHS and to find out association between Knowledge and selected variables.

**Significance of the study:** Hospital and Nursing service department can use the findings of this study to minimize the risk and uplift their KAP regarding PEP of HIV by providing in-service education / training. This will promote towards the safe working practices of the nurses.

## MATERIALS AND METHODS

**Research design:** Descriptive study design was adopted for the study.

**Research setting/sample area:** The study was conducted among the nurses working in medical-surgical units of BPKIHS, a tertiary level medical institute in Nepal

**Sample:** Nurses working in medical unit I, II, III and surgical unit I, II, III, Who fulfill the set selection criteria, were the sample of this study.

**Sample size:** Forty nurses were included in the study.

**Sampling technique:** Population proportionate Stratified sampling technique was used to select the study subject. Two strata were made, one medical and one surgical unit. From both the strata using population proportionate method 20 nurses were selected from Medical units and 20 were selected from the surgical units randomly.

**Research instrument:** Semi structured questionnaire was used to find out the demographic profile along with knowledge, and practices of nurses regarding post exposure prophylaxis of HIV.

**Validity of the tool:** Content and face validity of the tool was established with the experts of concerned field. Pre-testing of the tool was done among 10 % of total subjects.

**Procedure for data collection:**

A detailed list of all the nurses was prepared before starting the data collection.

Ethical clearance from concerned authorities was obtained.

Permission from concerned authorities i.e. HODs, In-charges was obtained.

Informed verbal consent from each subject was obtained prior to interview.

**Procedure for data collection and data analysis:** Data were collected by researcher himself by using well prepared semi structured research tool designed to assess the knowledge and practice of nurses regarding PEP of HIV.

***Statistical analysis***

Data was entered and analyzed on SPSS 11.5. Descriptive statistics i.e. percentage, mean, mode, median, inter quartile range and standard deviation was used to report findings of the study. Inferential statistics i.e. Mc Nemar Chi Square test, was used to find the association between the knowledge and selected demographic variables.

## RESULTS

A total 40 nurses including 20 from medical units and 20 from surgical units were included in the study. The current study shows that majority of respondents (70%) belonged to the age group of 20-25 years with the mean age=24.28, SD=3.4, range=18-35 yrs. Majority (87.5) of respondents were staff nurses followed by senior staff nurse (12.5%). Regarding experience 37.5 % of respondents had an experience of 1-3 years followed by less than 1 year (25 % ) and 3- 6 years (25 %) and 12.5 % had an experience of more than 6 years.

The current study shows that only 17.5 % of respondents had received in-service education /training on HIV/ AIDS and among those who received training on HIV/AIDS, 85.7% of respondents had taken the training of only 1 day followed by 14.2% of 3 days. Regarding in- service education/training on post exposure prophylaxis of HIV, only 10 % of them had received in- service education/training on post exposure prophylaxis of HIV and the duration of the course was 1 hour.

The finding of the current study shows that majority (90.0%) of respondents had the knowledge about the transmission of HIV through occupational exposure (needle prick, cuts, splashes), 77.5 % of respondents had the knowledge regarding Common mode of HIV Transmission to health care workers in health care setting i.e. Needle pricks injury. Similarly 80.0% of them knew that HIV is not transmitted by Just touching HIV+ve clients, 45.0% of them replied that approximate risk of occupational transmission of HIV in percutaneous exposure (0.3 %) and 85.0 % of respondents answered that the most common condition that increases the risk of HIV transmission during an occupational exposure (deep injury from blood filled hollow bore needle)

The current study shows that 87.5 % of respondents had the knowledge about the meaning of post exposure prophylaxis of HIV (i.e. Medical help given to prevent the occupational transmission of HIV after exposure), and same percentage of respondents (87.5%) knew the necessity of post exposure prophylaxis (PEP) for nurses after occupational exposure with HIV source. Similarly 80.0 % of respondents had the knowledge about the first aid for an occupational exposure (i.e. Wash wound with soap and running water) and only 5.0% of them had the knowledge about the best time for initiation of Post exposure prophylaxis (as soon as possible within 2 hours of Exposure) and 30.0 of them could know the duration of PEP of HIV is 28 days.

Result also reveals that 72.5% of respondents had the knowledge about the anti retroviral drug which was first used as PEP of HIV (Zidovudine (ZDV), 70.0 % of respondents had the knowledge about the combination of two drug therapy included in Nepal 2005 ART guidelines for PEP of HIV (i.e. Zidovudine (ZDV) 300mg + Lamivudine (3TC) 150mgX BD) and similarly 82.5 % of them had the knowledge about most common and important side effect of drugs used for PEP of HIV (Nausea).

Finding of current study shows that 95.0% of respondents had the knowledge about the inclusion of counseling and testing in PEP service in BPKIHS, 85.0 % of them were orientated about the availability of PEP of HIV service in BPKIHS, 92.5 % of them said that PEP Service is available in Tropical Ward of BPKIHS and only 17.5 % had the knowledge about the availability of PEP service round the clock in BPKIHS.

**Table1: Sociodemographic Profile of Respondents (n=40).**

| Sociodemographic Profiles | Category | Frequency | Percentage |
|---|---|---|---|
| Age(in yrs) | <20 yrs | 1 | 2.5 |
| | 20-25 yrs | 28 | 70.0 |
| | 25-30 yrs | 9 | 22.5 |
| | 30-35 yrs | 2 | 5.0 |
| **Mean age=24.28, SD=3.4, Range=18-35 yrs** | | | |
| Designation of Nurses | Senior staff nurse | 5 | 12.5 |
| | Staff nurse | 35 | 87.5 |
| Working Units | Surgery 1 | 10 | 25.0 |
| | Surgery 2 | 10 | 25.0 |
| | Medicine 2 | 10 | 25.0 |
| | Medicine 3 | 10 | 25.0 |
| Experiences (after completion of study) | <1 year | 10 | 25.0 |
| | 1-3 years | 15 | 37.5 |
| | 3- 6 Years | 10 | 25.0 |
| | > 6 years | 5 | 12.5 |

**Table 2: Training or In-service Education on HIV and PEP (n=40).**

| Characteristics | Category | Frequency | Percentage |
|---|---|---|---|
| Received in-service education /training on HIV/ AIDS | Yes | 7 | 17.5 |
| | No | 33 | 82.5 |
| If Yes, Duration of Training (n=7) | 1 day | 6 | 85.7 |
| | 3 days | 1 | 14.2 |
| Received in- service education/training on post exposure prophylaxis of HIV | Yes | 4 | 10.0 |
| | No | 36 | 90.0 |
| If Yes, Duration of Training (n= 4) | 1 hour | 4 | 100 |

**Table 3: Knowledge regarding Modes of Transmission of HIV/AIDS (n=40).**

| Knowledge regarding | Correct Response | Percentage |
|---|---|---|
| Transmission of HIV through occupational exposure (needle prick, cuts, splashes | 36 | 90.0 |
| Common mode of HIV Transmission to health care workers in health care setting i.e. Needle pricks injury | 31 | 77.5 |
| HIV is not transmitted by Just touching $HIV^{+ve}$ clients. | 32 | 80.0 |
| Approximate risk of occupational transmission of HIV in Percutaneous exposure (0.3 %) | 18 | 45.0 |
| The most common condition that increases the risk of HIV transmission during an occupational exposure (Deep injury from blood filled hollow bore needle) | 34 | 85.0 |

**Table 4: Knowledge regarding Post Exposure Prophylaxis of HIV (n=40).**

| Characteristics | Frequency | Percentage |
|---|---|---|
| Meaning of Post exposure prophylaxis of HIV (Medical help given to prevent the occupational transmission of HIV after exposure ) | 35 | 87.5 |
| Necessity of post exposure prophylaxis(PEP) for nurses after occupational exposure with HIV source | 35 | 87.5 |
| First aid for an occupational exposure (Wash wound with soap and running water) | 32 | 80.0 |
| Best Time for Initiation of Post exposure prophylaxis ( as soon as possible within 2 hours of Exposure ) | 2 | 5.0 |
| Duration of PEP of HIV (28 days) | 12 | 30.0 |

**Table 5: Knowledge Regarding the Drugs Used in PEP (n=40).**

| Characteristics | Frequency | Percentage |
|---|---|---|
| Anti retroviral drug was first used as PEP of HIV(Zidovudine (ZDV) | 29 | 72.5 |
| Combination of two drug therapy included in Nepal 2005 ART guidelines for PEP of HIV: Zidovudine (ZDV) 300mg + Lamivudine (3TC) 150mgX BD | 28 | 70.0 |
| Most common and important side effect of drugs used for PEP of HIV (Nausea) | 33 | 82.5 |

**Table 6: Knowledge Regarding the PEP Services in BPKIHS (n=40).**

| Characteristics | Frequency | Percentage |
|---|---|---|
| Inclusion of Counseling and Testing in PEP service | 38 | 95.0 |
| Availability of PEP of HIV service in BPKIHS | 34 | 85.0 |
| Availability of PEP Service in Tropical Ward of BPKIHS | 37 | 92.5 |
| Availability of PEP service Round the clock | 7 | 17.5 |

**Table 7: Respondents Practice of Receiving Post Exposure Prophylaxis (PEP) after Exposure (n=40).**

| Characteristics | Frequency(Yes) | Percentage |
|---|---|---|
| Did you seek help from PEP of HIV services? | 6 | 15.0 |
| Did you try to find out the HIV status of the source? | 7 | 17.5 |
| Did you receive pre test and post test counseling for that exposure? | 1 | 2.5 |
| Did you check your HIV status for that exposure? | 8 | 20.0 |
| Did you check your HIV status for that exposure? | 7 | 17.5 |
| Did you ever received ARV drugs for any of the exposure during your nursing exposure? | 5 | 12.5 |

**Table 8: Practice Regarding PEP on those Receiving Anti Retroviral Therapy (n=5).**

| Characteristics | Category | Frequency | Percentage |
|---|---|---|---|
| Did you complete the course of therapy? | Yes | 1 | 20.0 |
| | No | 4 | 80.0 |
| Did you experience any side effects of ARV drugs during prophylaxis? | Yes | 0 | 0 |
| | No | 5 | 100 |
| Did you have your blood tested prior and during your ARV prophylaxis? | Yes | 0 | 0 |
| | No | 5 | 100 |
| Did you have your HIV follow up visit (after weeks, 3 months and 6 months) after ARV prophylaxis | Yes | 1 | 20.0 |
| | No | 4 | 80.0 |

While asking the questions about the Frequency of being exposed to blood and body fluids in the period of their job, respondents had given the history of being exposed to blood and body fluids during injection (32.5%), drawing blood (25%), putting IV lines( 32.5%), Dressing (5%) and during recapping of needles(47.5%)

The current study shows that only 15% of respondents had seeked help from PEP of HIV services, only 17.5% of them tried to find out the HIV status of the source, only 2.5% of them received pre test and post test counseling for that exposure, 20% of them checked their HIV status for that exposure and only minority (12.5 %) of them received ARV drugs for any of the exposure during their nursing exposure.

The current study shows that among those who received anti-retroviral therapy (ART), 80 % of them said that they did not complete the course of therapy and among those who were taking ART therapy none of them experienced any side effects of ARV drugs during prophylaxis and none of them had their blood tested prior and during your ARV prophylaxis and only 20 % of respondents had made follow up visit (after weeks, 3 months and 6 months) after ARV prophylaxis.

## DISCUSSION AND CONCLUSION

In the present study, majority of respondents (70%) belonged to the age group of 20-25 years with the mean age=24.28, SD=3.4, Range=18-35 yrs. Similarly majority (87.5) of respondents were Staff nurses followed by senior staff nurse (12.5%). Regarding Experience 37.5 % of respondents had an experience of 1-3 years followed by <1 years and 3- 6 years in 25 % % and 12.5 % had an experience of more than 6 years.

The result of present study shows that only 17.5 % of respondents had received in-service education /training on HIV/ AIDS and among those who received training on HIV/AIDS, 85.7% of respondents had taken the training of only 1 day followed by 14.2%of 3 days. Regarding in- service education/training on post exposure prophylaxis of HIV, only 10 % of them had received in- service education/training on post exposure prophylaxis of HIV and the duration of the course was 1 hour. The finding of the current study is contradictory to the finding of the study conducted by Lamichanne J, Aryal B. and Sharma Dhakal K. in Medical Colleges of Chitwan District, revealed that Cent percent respondents had not received any training on post exposure prophylaxis 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%). [10]

The finding of present study shows that majority (90.0%) of respondents had the knowledge about the transmission of HIV through occupational exposure (needle prick, cuts, splashes), 77.5 % of respondents had the knowledge regarding common mode of HIV Transmission to health care workers in health care setting i.e. needle pricks injury. Similarly 80.0% of them knew that HIV is not transmitted by Just touching HIV+ve clients, 45.0% of them replied that Approximate risk of occupational transmission of HIV in Percutaneous exposure (0.3 %) and 85.0 % of respondents answered that the most common condition that increases the risk of HIV transmission during an occupational exposure (i.e. deep injury from blood filled hollow bore needle).

Finding of the present study shows that 87.5 % of respondents had the knowledge about the meaning of post exposure prophylaxis of HIV (i.e. medical help given to prevent the occupational transmission of HIV after exposure), and same percentage of respondents (87.5%) knew the necessity of post exposure prophylaxis (PEP) for nurses after occupational exposure with HIV source. Similarly in the present study 80.0 % of respondents had the knowledge about the first aid for an occupational exposure (i.e. Wash wound with soap and running water) This finding of current study is higher to the finding of a study of Baheti, Tullu & Lahiri which showed that only 40.8% nurses had knowledge about the fact that the exposed site must be immediately washed with soap and water. [11]

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 and in the present study only 5.0% of them had the knowledge about the best time for initiation of Post exposure prophylaxis (as soon as possible within 2 hours of Exposure) and 30.0 % of them could know the duration of PEP of HIV is 28 days. [12] 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. [13] 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. [14]

In the present study, 72.5% of respondents had the knowledge about the anti retroviral drug which was first used as PEP of HIV ( ie. Zidovudine (ZDV), 70.0 of respondents had the knowledge about the combination of two drug therapy included in Nepal 2005 ART guidelines for PEP of HIV(i.e. Zidovudine (ZDV) 300mg + Lamivudine (3TC) 150mgX BD) and similarly 82.5of them had the knowledge about most common and important side effect of drugs used for PEP of HIV (Nausea). The finding of current study is different than the finding study of Owolabi et al which showed that only 30.9% of respondents' could correctly identify the drugs used and duration of PEP. [15]

Finding of current study shows that 95.0% of respondents had the knowledge about the inclusion of counseling and testing in PEP service in BPKIHS, 85.0 % of them were orientated about the availability of PEP of HIV service in BPKIHS, 92.5 % of them said that PEP Service is available in Tropical Ward of BPKIHS and only 17.5 % had the knowledge about the availability of PEP service round the clock in BPKIHS. 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. [16] The finding of the current study is supported by the finding of the study conducted by Lamichanne J, Aryal B. and Sharma Dhakal K. in Medical Colleges of Chitwan District, which revealed that eighty- six percent of respondents were aware that hospital hasn't any protocol about PEP of HIV. [17]

Finding of current study shows that only 15% of respondents had seeked help from PEP of HIV services, only 17.5% of them tried to find out the HIV status of the source, only 2.5% of them received pre test and post test counseling for that exposure, 20% of them checked their HIV status for that exposure and only minority (12.5 %) of them received ARV drugs for any of the exposure during their nursing exposure.

Similarly the report of present study shows that among those who received anti-retroviral therapy (ART), 80 % of them said that they did not complete the course of therapy and among those who were taking ART therapy none of them experienced any side effects of ARV drugs during prophylaxis and none of them had their blood tested prior and during your ARV prophylaxis and only 20 % of respondents had made follow up visit (after weeks, 3 months and 6 months) after ARV prophylaxis.

## CONCLUSION

Based on the findings and discussions of the study, it is concluded that nurses working on medical and surgical units of B.P. Koirala Institute had fair level of knowledge about PEP of HIV. Knowledge regarding PEP was found to be satisfactory in majority of respondents but practice was found to be less. And there is no association between the knowledge and practice of PEP of HIV with demographic variables. Hence educational intervention should be carried out periodically to enhance their practice.


## ACKNOWLEDGEMENT(S)

We would like to express our sincere gratitude to BPKIHS for providing us the opportunity and facilities to conduct this research and for providing the financial support to complete this study. We are extremely

thankful to Prof Dr Ram Sharan Mehta, Dr. Gyanendra Malla, and Mr. Om Prakash Shrivastawa for his co-operation, help and guidance whenever needed.

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How to cite this article: Mandal G, Mehta RS. Knowledge and practices on post exposure prophylaxis (PEP) of HIV among nurses working in medical-surgical units of BPKIHS, Nepal. Int J Health Sci Res. 2016; 6(5):168-176.

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