Research Article

Awareness and practice of post-exposure prophylaxis (PEP) of HIV among health-care workers in tertiary care hospital of Haldwani, Nainital, Uttarakhand, India

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Abstract

Background: Human immunodeficiency virus (HIV) is a major global public health problem. Health-care workers (HCWs) are persons working in health-care setting. They are potentially exposed to infectious materials such as blood, tissue, and specific body fluids and are very vulnerable to infections mediated by blood and blood products.

Objective: The aim and objective of this study is to assess the awareness and practice toward post-exposure prophylaxis (PEP) for HIV, which is an important strategy for prevention of HIV among HCWs.

Material and Methods: A cross-sectional study was conducted from August 2014 to January 2015 among HCWs in tertiary care hospital. Data were collected using pre-designed, semi-structured questionnaire from study participants. Data were entered in MS Excel sheet and analyzed using SPSS v 16. Results are presented in frequencies and percentages.

Results: About one-third (65.5%) of participants have heard of PEP for HIV. Ninety-nine (45%) respondents knew when to initiate PEP for HIV. Approximately, one-fourth (23.2%) of the respondents knew the maximum acceptable delay to take PEP for HIV and about half of the participants (52.7%) had knowledge regarding the duration of PEP to prevent HIV. Among all HCWs, 47 (21.4%) were ever exposed to blood or body fluids or needle stick injury and out of these only 7 (14.9%) had taken PEP.

Conclusion: Awareness as well as practice of PEP for HIV among HCWs is inadequate. A training and regular sensitization of all HCWs regarding PEP for HIV is recommended to improve their knowledge.

KEY WORDS: Post-exposure prophylaxis, HIV, health-care workers, tertiary care hospital

Introduction

Human immunodeficiency virus (HIV) continues to be a major global public health issue, which has claimed more than 39 million lives so far. Globally, 1.5 [1.4–1.7] million people died from HIV-related causes in 2013.[1] India has the third highest number of estimated people living with HIV in the world. According to the HIV Estimations 2012, the estimated number of people living with HIV/AIDS in India was 20.89 lakh, with an estimated adult (15–49 age group) HIV prevalence of 0.27% in 2011.[2]

The joint United Nations Programme on HIV and AIDS (UNAIDS) declaration on HIV and AIDS in 2011 confirms that HIV prevention must remain the cornerstone of the HIV response. Different strategies for HIV prevention include early HIV diagnosis and the use of antiretroviral therapy (ART) to prevent transmission of HIV (treatment as prevention and pre- and post-exposure prophylaxis [PrEP and PEP]). PEP is the use of short-term ART to reduce the risk of acquisition of HIV

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infection following exposure. PEP must be started as early as possible as it may take up to 72 h for HIV to be detected in regional lymph nodes, up to 5 days to be detected in blood, and about 8 days to be detected in the cerebrospinal fluid. This offers a window of opportunity to prevent acquisition of HIV infection following exposure by inhibiting viral replication or preventing dissemination of infection.[3]

WHO recommends PEP use for both occupational and non-occupational exposures and for adults and children.[1]

The first case of documented seroconversion after a specific occupational exposure to HIV was reported in 1984 and an approximate number of 1000 cases occur each year due to accidental exposure.[4] PEP was first used after occupational HIV exposures in the late-1980s, with the Centers for Disease Control and Prevention issuing the first set of guidelines that included considerations regarding the use of antiretroviral agents for PEP after occupational HIVexposures in 1990.[5]

Occupational exposure refers to exposure to potential blood-borne infections (HIV, HBV HCV) that may occur in health-care settings during performance of job duties. PEP refers to comprehensive medical management to minimise the risk of infection among health-care workers (HCWs) following the potential exposure to blood-borne pathogens (HIV, HBV, HCV). This includes counselling, risk assessment, relevant laboratory investigations based on informed consent of the source and exposed person, first aid and depending on the risk assessment, the provision of antiretroviral drugs for four weeks, with follow up and support.[6]

HCWs are persons working in health-care setting and they are potentially exposed to infectious materials such as blood, tissue, specific body fluids, medical supplies, equipment, or environmental surfaces contaminated with these substances. They are frequently exposed to occupational hazards through percutaneous injury such as needle stick or cut with sharps, contact with the mucus membrane of eyes or mouth of an infected person, contact with non-intact skin exposed with blood, or other potentially infectious body fluids.[7]

The HCWs are usually extremely busy and overburdened in a busy and tertiary care hospital. Thus, personal protection may not always remain a priority for them and they may also have constraints of resources for prevention of occupational exposures, such as hand gloves. Thus, HCWs are very vulnerable to infections mediated by blood and blood products.[8]

Awareness of PEP for HIV is very crucial to ensure maximum utilization of PEP in any HIV prevention strategy. Thus, this study was undertaken to assess awareness and practice about HIV PEP among HCWs of a tertiary care hospital of Haldwani, Nainital, Uttarakhand, India.

Material and Methods

Cross-sectional study was conducted from August 2014 to January 2015 among HCWs in a tertiary care hospital of Haldwani, Nainital**.** Govt Medical College and Hospital, Haldwani is a tertiary-level referral hospital that serves people of Kumaun region of Uttarakhand. It has more than 500 beds with intensive care unit.

The sample size was calculated using single proportion formula ($n = [Z\alpha/2]^2 P(1 - P)/d^2$) at 95% level of confidence, where $Z\alpha/2$ is taken as 1.96. Prevalence was assumed to be 50% as there is no similar study in the study area and absolute error (d) was taken as 5%. Using this formula, the sample size was obtained as 384. Since this sample size exceeds 5% of the population, Cochran's correction formula was used to calculate the final sample size. We used correction formula of $n_1 = n_0/(1 + n_0/\text{population})$, where n_1 = corrected sample size and n_0 = uncorrected sample size.[9] Using this correction formula [384/(1 + 384/500)], final sample size obtained was 218.

The study participants included in the study were various HCWs such as post-graduate resident doctors, interns, nurses, lab technicians, and other sanitary staff involved in handling bio-medical waste. The study participants were selected using simple random sampling technique.

Data were collected using pre-designed, semi-structured questionnaire from the participants by interviewing them. Informed consent was taken from the participants after explaining them about the purpose of the 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 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.

Data were entered in MS Excel sheet and analyzed using SPSS v 16. Results are presented in frequencies and percentages.

Ethical approval for the study was taken from the institutional ethical committee.

Results

A total of 220 HCWs were included in the study and majority of them were females (61.4%). About half (49.6%) of the participants belonged to age group of 20–30 years followed by 44% in the age group of 31–40 years. Among the HCWs, majority were nurses (47.3%) followed by doctors (23.2%), lab technicians (18.2%), and other sanitary staff (11.4%). Majority of the participants (60%) had work experience of more than 5 years [Table 1].

About one-third (65.5%) of participants have heard of PEP for HIV. Ninety-nine (45%) respondents knew when to initiate PEP for HIV. Approximately, one-fourth (23.2 %) of the respondents knew the maximum acceptable delay to take PEP for HIV and about half of the participants (52.7%) had knowledge regarding the duration of PEP to prevent HIV [Table 2].

Table 1: Socio-demographic profile of HCWs

Characteristics	No.	%
Age		
20–30 year	109	49.6
31–40 year	96	43.6
41–50 year	15	6.8
Sex		
Male	85	38.6
Female	135	61.4
Religion		
Hindu	157	71.4
Muslim	9	4.1
Christian	54	24.5
Profession		
Doctor	51	23.2
Nurse	104	47.3
Lab technician	40	18.2
Sanitary staff	25	11.4
Marital status		
Unmarried	85	38.6
Married	134	60.9
Divorced	1	0.5
Work experience		
Below 2 year	50	22.7
2–5 year	39	17.7
5–10 year	99	45
More than 10 year	32	14.6

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, 165 (75%) knew that eyes and mouth should be washed with normal saline or water after exposure, and only 45 (20.5%) knew that antiseptics should not be applied to wounds [Table 2].

Practice status of the HCWs toward PEP for HIV: Among all HCWs, 47 (21.4%) were ever exposed to blood or body fluids or needle stick injury and out of these only 7 (14.9%) had taken PEP [Table 2].

Discussion

HCWs are at constant risk of occupational exposure to blood and other body fluids that carry the risk of transmission of HIV infection to them. So ensuring occupational health safety is a serious challenge in tertiary care centers. Therefore, this study assessed the awareness and practice toward PEP for HIV, which is an important strategy for the prevention of HIV among HCWs in a tertiary care hospital at Haldwani, Nainital, Uttarakhand.

In this study 65.5% study participants have heard about PEP for HIV, which is low in comparison to study by Owolabi et al.,[10] Mathewos et al.[7] and Agaba et al.,[4] where 97%, 92.8% and 97.7% have heard of PEP, respectively. Ashat et al.[11] in their study among HCWs in North India found awareness regarding PEP for HIV to be 27.1%, which is much lower in comparison to the present study.

Immediate first aid measure is to wash the exposed part with soap and water after any exposure to patient's blood or other body fluids, and our study revealed that majority of the respondents (93.6%) had awareness regarding washing the exposed part with soap and water, which is similar to observation by Bairy et al. where 94% doctors and nurses were aware of washing with soap and water.[12] This was found to be higher in comparison to studies by Mukherjee et al.[13] and Chogle et al.[14] where awareness regarding washing of exposed part with soap and water was observed in 84.6% and 78%, respectively.

This study also found that three-fourth (75%) of respondents were aware of washing the exposed eyes and mouth with water or normal saline, which was higher in comparison to study by Mukherjee et al.[13] where 65.4% were aware.

Regarding one important fact that finger should not be put into mouth after injury, awareness was observed in about one-third (68.6%) of participants in our study, which is similar to observation by Mukherjee et al.[13] where 70% knew of this fact.

Another important point in relation to application of antiseptics to wounds, this study revealed that only 20.5% of participants were aware of the fact that antiseptics should not be applied to wounds, which was much lower in comparison to study by Mukherjee et al.[13] among interns where 67.7% were aware that antiseptic application could cause more damage to exposed tissues.

Regarding initiation of PEP for HIV, in this study 43.6% of the total respondents stated that PEP should be taken within 2 h, which is lower than the findings of study by Mukherjee et al.[13] among interns where 68.5% expressed that PEP drugs are best effective when started within 2 h following the exposure.

Awareness regarding duration of PEP treatment was present in 52.7% of the participants in this study, while study by Mukherjee et al.[13] reported that 46.9% of interns had the correct knowledge about the duration of the regimen of PEP for HIV. Chogle et al.[14] in their study observed that only 6% respondents knew the correct duration of PEP.

Any incidence of exposure should be reported immediately to appropriate authority. Our study showed that 64.5% of the participants were aware of this fact, which is almost similar to study by Mukherjee et al.[13] where 63.8% of the respondents were actually aware of reporting any incidence of occupational exposure to the superior officer on-duty.

Self-reported occupational exposure to blood and body fluids by the respondents in the present study was 21.4% and out of these only 14.9% took PEP for HIV. This was found to be lower in comparison to study by Singru and Banerjee where occupational exposure to blood and body fluids in the preceding 12 months was reported by 32.75% of the respondents and 21.31% of the HCWs exposed to blood and body fluids took PEP for HIV.[15]

Table 2: Awareness and practice of respondents regarding post-exposure prophylaxis for HIV

Characteristics	Response	No.	%
Heard of PEP	Yes	144	65.5
	No	76	34.5
Finger should not be put into mouth immediately after exposure	Yes	151	68.6
	No	69	31.4
Exposed part should be washed with soap and water	Yes	204	92.7
	No	16	6.3
Antiseptics should be applied to wounds	Yes	159	72.3
	No	61	27.7
Eyes and mouth should be washed with normal saline or water after exposure	Yes	164	74.5
	No	56	25.5
Maximum delay to take PEP	12 h	69	31.4
	24 h	44	20
	48 h	20	9.1
	72 h	49	22.3
	Don't know	38	17.3
Preferable time to take PEP	2 h	96	43.6
	6 h	32	14.5
	12 h	29	13.2
	72 h	21	9.5
	Don't know	42	19.1
Duration of PEP treatment	28 days	113	51.4
	45 days	14	6.4
	6 months	26	11.8
	Life long	5	2.3
	Don't know	62	28.2
Knowledge regarding reporting of exposure	Yes	142	64.5
	No	78	35.5
Ever exposed to blood or body fluids or needle stick injury	Yes	47	21.4
Ever taken PEP after exposure (out of total exposed)	Yes	7	14.89

Conclusion

Awareness as well as practice of PEP for HIV among HCWs is inadequate. Many of the HCWs were exposed to HIV risky conditions, but only very less percentage of them took PEP for HIV. Therefore, a training and regular sensitization of all HCWs regarding PEP for HIV is recommended to improve their knowledge. Awareness regarding reporting of any incidence of occupational exposure to blood and other body fluids to designated person of the hospital for providing PEP for HIV should be enhanced.

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