Journal of
AIDS & Clinical Research
ISSN: 2155-6113

Gebreslase and Buruh, J AIDS Clin Res 2014, 5:6
DOI: 10.4172/2155-6113.1000313

Research Article Open Access

HIV Post-Exposure Prophylaxis Use and Associated Factors among Health Professionals of Governmental Health Institutions in Mekelle Town, Tigray Ethiopia, Cross-Sectional Study

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Abstract

Background: Infection with Human Immunodeficiency Virus is a serious public health problem, costing the lives of many people including health workers. Health care workers practicing in developing countries like Ethiopia are more exposed to HIV following occupational exposure and less likely to use post exposure prophylaxis. Ethiopia has developed guidelines on the prevention of infection in health institutions in July 2004 and also employed the use of post exposure prophylaxis since the implementation of free antiretroviral in January 2005.

Objective: the main aim of this study was to assess prevalence of PEP service use among health professionals in Mekelle town.

Methodology: A health institution based cross sectional study design involving 190 health professionals was employed using a structured self administered questionnaire. Sampling technique was based on the population proportion to size, then to select a study unit systematic random sampling was used. SPSS version 16.00 was used for data entry and analysis. Proportions and percentages were used for descriptions of data.

Result: the study revealed that occupational exposure to blood, non bloody body fluids, needle stick injuries and mucocutaneous were 82.5%, 74.9%, 49.1% and 42.7% respectively. Among the exposed health professionals 19.6% use PEP. The main reasons for not using PEP was source patient HIV test result negative (65.5%), followed by negligence (25%). For those who started PEP all of them get HIV testing before commencing PEP and 80% of them completed in 4 weeks, 20% discontinue the PEP due to adverse effects of the drugs. Training of health professionals on PEP had statistically significant association with PEP utilization (AOR=2. 864, 95% CI=1. 152-7.122)

Conclusion: the finding of this result indicated that occupational exposures were common among health professionals. The use of PEP among exposed health professionals was low. Providing training for all health professionals on infection prevention, including PEP is recommended to lower the occupational exposure and to enhance the use of PEP.

Keywords: Occupational exposure; Health professionals; Post exposure prophylaxis; Mekelle

Introduction

HIV infection is a pandemic, serious public health problem, as of December 2007, 33 million people were estimated to be living with HIV/AIDS. Of the 33 million, 22.5 million were living in sub-Saharan Africa alone, where the adult prevalence rate is 5.0 percent [1,2]. It is estimated that 4.4% (range 0.8% to 18.5%) of all HIV infections amongst HCWs are due to occupational injuries. It is further estimated that at least half of these cases occur in sub-Saharan Africa [3,4].

The adoption of standard universal precaution and use of personal protective equipments (PPEs) led to a significant reduction in occupational exposures over the last two decades. Despite these precautions, occupational exposures are still occurring and the use of PEP is paramount [5]. Prophylaxis were primarily used after occupational exposures of health care workers to HIV-infected blood and body fluids, usually through needle stick injuries or contact with splashes blood or body fluids [3,6,7].

Occupational exposure to HIV is probably the most serious causes of highest level anxiety amongst health professionals in many countries including in Ethiopia. Ethiopia is one of the hardest hit countries by HIV/ AIDS epidemics with the national HIV prevalence 2.4% of adults [1,8].

Occupational infection from body fluid borne pathogens is the most serious health risk faced by healthcare workers. Of 35 million healthcare workers worldwide, the World Health Organization (WHO) estimated that approximately 3million experiences percutaneous injuries each year. Most of these exposures occur in developing countries, where the prevalence of body fluid borne pathogens in the general population is high and access to protective equipment is limited [9].

Exposures that place a health care worker at potential risk of HIV infection are percutaneous injuries (a needle stick or cut with a sharp object) or contact of mucous membrane or non intact skin (exposed skin that is chapped, abraded, or afflicted with dermatitis) with blood, tissue, or other potentially infectious body fluids. HIV transmission following skin puncture from a needle or a sharp object that was contaminated

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Received April 21, 2014; **Accepted** May 20, 2014; **Published** June 04, 2014

Citation: Gebreslase T, Buruh G (2014) HIV Post-Exposure Prophylaxis Use and Associated Factors among Health Professionals of Governmental Health Institutions in Mekelle Town, Tigray Ethiopia, Cross-Sectional Study. J AIDS Clin Res 5: 313. doi:10.4172/2155-6113.1000313

with blood from a person with documented HIV infection is ~ 0.3%, and after a mucous membrane exposure is 0.09% [9,10].

After exposure, HIV replicates within dendritic cells of the skin and mucous before spreading through the lymphatic vessels and develops into systemic infection. This delay in the systemic spread gives an opportunity for PEP using designed to block replication of HIV [11]. Even though the maximum delay for initiation of treatment to prevent infection is not known in human. The CDC recommendations are to offer prophylaxis up to 24 to 36 hours after exposure (No consideration of PEP beyond 72 hours) [2,11,12].

The drugs used for PEP can be 2 (low risk exposure) or 3 (for high risk exposure) anti retroviral therapy (ART) for 28 days. Conditions like blood come into contact with cuts on the skin, exposure to a large volume of blood or potentially infectious fluids or blood contamination from terminally ill patients or early seroconversion phase of HIV, injury with a hollow needle and deep and extensive injury are considered as high risk exposure [4-8].

The low risk exposure is considered a small volume of blood, blood contamination from asymptomatic HIV positive patients, injury with solid needle, superficial injury, glove use during exposure and mucocutaneous exposures. The health professionals at high risk of occupational exposure include physicians, health officers, nurses, midwives and laboratory technicians. When used properly PEP reduces the rate of HIV infection from exposure by 79-81% [1,2,11,12].

Health care workers practicing in poor countries like Ethiopia are more exposed to HIV occupational exposure and less likely to use PEP than those working in developed countries [4]. A research done on the assessment of HIV post-exposure prophylaxis use among health workers of governmental health institutions in Jimma zone, Oromiya region, southwest Ethiopia by Bosena Tebeje, in 2010 showed that 142 (81.6%) of those exposed reported that they did not use PEP [1]. This research will, therefore, try to explore the existing magnitude of occupational exposure to HIV and use of PEP among those exposed to health professionals in Mekelle town.

HIV post exposure prophylaxes are a form of secondary HIV prevention that may reduce the incidence of HIV infections. Occupational HIV PEP is an accepted form of therapy for health care workers exposed to HIV through their jobs. Since its inception, the medical profession has been vulnerable to occupational exposure to infectious diseases. With the emergence of HIV infection and its relentless global spread, health care workers are increasingly being exposed to patients who are HIV positive or have frank AIDS. Despite the use of universal precautions, accidental occupational exposure to blood or potentially infectious materials does occur [13].

The risk for occupational exposure to HIV has been well characterized in the developed world, but limited information is available about this transmission risk in resource-constrained settings facing the largest burden of HIV infection. In addition, the feasibility and utilization of post-exposure prophylaxis programs in these settings are unclear [5].

Ethiopia as one of the resource constrained countries, the magnitude of occupational exposure and utilization of PEP among health professional is not known. Specifically, in Mekelle published studies showed that the clear picture of occupational exposure and HIV PEP use in the workplace does not exist. This study is therefore undertaking to assess the level of occupational exposure and knowledge, attitude, practice; and factors associated with HIV PEP use among health professionals working in governmental health institutions in Mekelle town. Finally to come up with recommendations to enable responsible bodies to design, integrate and to take appropriate measure. It will also help as an input for the subsequent large scale researches.

Methods

Study area and period

The study was undertaken in Mekelle town from July 23 to August 03 2012. Mekelle is the capital city of Tigray and found around 780 km away the capital city Addis Ababa. The current total population of Mekelle is estimated to be 264,907 (2011). According to the existing health service delivery system, the town has 4 governmental, 4 private hospitals, and 9 health centers, 22 private clinics, 6 rural drug venders, 35 drug shops 4 pharmacies and 9 whole sellers. There are about 806 health professionals from these 83 physicians, 24 health officers, 482 nurses, 60 laboratory technicians and 38 midwives working in these health centers and hospitals.

An institution based cross sectional study design was employed between July 23 to August 03 2012.

The study population was health professionals who were currently working in two hospitals and three health centers, which provide ART in the town and directly involved in the care of patients (Physicians, health officers, nurses, midwives and laboratory technicians) in hospitals and health centers of the study area.

The inclusion criteria were all health professionals working in the study area who have a potential to be exposed to HIV high risk conditions in their day to day professional activities; and the exclusion criteria are health professionals in whom their day to day activity doesn't make them to be at high risk of HIV due to occupational exposure.

The sample size was determined using single proportion formula; with a P value taken from previous studies in the local context in Bahirdar town, 2010; which was 19% [11]. Since the source population was less than 10,000 a finite population correction formula was used; therefore, the final sample size was 190. To identify the study subject a systematic random sampling was applied to each health facility. From the list of all the source populations, Kth value was calculated; then every Kth person was included in the study. To select the first study subject lottery method was used.

Data collection was conducted using a structured self administered questionnaire. Before the actual data collection began, pretest was done in Quiha hospital and Quiha health center in 5% of the sample. After data collection was completed, each questionnaire was checked for completeness, missing values and unrelated responses. The coded data were entered into the computer using Epi-Info and cleaning were performed, then the cleaned data was exported to SPSS version16.0 for analyses.

Ethical clearance was obtained from Mekelle University, college of health science Ethical Review Committee and Tigray Health Bureau. The letter was written to medical director of Mekelle hospital and head of the health centers to obtain their consent. Necessary explanation about the purpose of the study and its procedures was done to the respondent and their consent was also obtained from each respondent. To ensure confidentiality, anonymity was used and they were informed to withdraw at any time if inconvenient.

Results

Socio-demographic characteristics of the study population

The study was conducted on 190 health care professionals with a

Characteristics		Frequency
Age	20-29	91 (53.2)
	30-39	45(26.3%)
	40-49	25(14.6%)
	50-59	10(5.8%)
Sex	Male	62(36.3%)
	Female	109(63.7%)
Marital status	Single	81(47.4%)
	Married	74(43.3%)
	Divorced	11(6.4%)
	Widowed	3(1.8%)
	Separated	2(1.2%)
Religion	Orthodox	162(94.7%)
	Muslim	5(2.9%)
	Protestant	2(1.2%)
	Catholic	2(1.2%)
Profession	Nurses	106(62%)
	Midwife	24(14%)
	Physician	16(9.4%)
	Laboratory	14(8.2%)
	Health officer	11(6.4%)
Department	Medical ward	34(19.9%)
	Outpatient department	50(29.9%)
	Gynecology & obstetrics	35(20.5%)
	Pediatrics	20(11.7%)
	Surgical ward	17(9.9%)
	Laboratory	15(8.8%)
Service year	<10years	119(69.6%)
	>10years	52(30.4%)
Night shift	Yes	136(79.5%)
	No	35(20.5%)
Patient cared daily	<35	126(73.7%)
	>35	45(26.3%)

Table 1: Socio demographic characteristics of the respondents.

non response rate of 10% (19 questionnaires, 15 not returned and 4 incorrectly filled). A majority, 109 (63.7%), of the respondents were females. The age of the respondents ranged from 20 to 58 years with the median age of 28 years.

Of the total respondents, 106 (62%) were nurses, 24 (14%) midwives, 16 (9.4%) physicians, 14 (8.2%) laboratory and 11 (6.4%) were health officers. Almost all of the participants, 162 (94.7%), were Orthodox Christians and 81 (47.4%) were single in marital status.

About 79.5% of the respondents were working in night shifts and 126 (73.3%) of the respondents cared less than 35 patients per day the rest 45 (26.3%) cared greater than 35 patients per day (Table 1).

Perception of professional HIV infection risk

Out of the total respondent 145 (84.8%) had perceived risk of acquiring HIV infection. 83 (48.5%) respondents leveled themselves as having high risk and 63 (36.8%) leveled themselves as having low risk for HIV while 25 (14.6%) don't know whether they are or not at risk of HIV infection.

Prevalence of occupational exposures among health professionals

Blood was the most common fluid in which health professionals were exposed during their day to day activities. The exposure to blood, non blood body fluid, needle stick injury and mucocutaneous were 82.5%, 74.9%, 49.1% and 42.7% respectively.

Health professional's exposure to HIV risk conditions

Among the 84 needle stick injuries, 69 (82.1%) had 1-3 times in their lifetime, 13 (15.47%) had 4-6 times in their lifetime and 2 (2.3%) had 7-10 times stick injuries in their lifetime. Based on the last year history of exposure 48 (28.07%) of the respondents had at least one needle stick injury.

The most common reason for sustaining the recent injury was due to patient sudden movement 21(43.7%), during recapping 13 (27%), during sharp collection eight (16.6%) and due to other causes seven (14.6%) (Table 2).

Immediate Measures taken after needle stick injury and mucosemembrane exposure

Different measures were taken by health professional immediately following exposure. Washing with soap and water was the most common measure taken 47(55.9%) followed by squeezing for more bleeding 10(11.9%).

Respondents answered different measure after body fluid exposure to their eye, mouth and/nose. The majority 61(83.56%) considered immediate washing with water and soap 61(83.56%), visiting VCT immediately after exposure five (6.8%) (Table 3).

Knowledge of health professionals about HIV PEP

Almost all of the respondents 167 (97.7%) knew the presence of PEP drugs that are given following accidental occupational exposure to HIV, 160 (93.3%) of the respondents answered that HIV testing is important before commencing PEP drugs against HIV. 53 (31%) of the respondents replied that either two or three PEP drugs can be used based on level of exposure. 93 (54.4%) of the respondents answered that the maximum time limit to initiate HIV PEP is 72 hours and 140 (81.9%) of the respondents answered that 28days is the time duration for PEP.

In general 98(57.3%) of the respondents had good knowledge 71(41.5%) had fair knowledge and 2(1.2%) had poor knowledge about PEP (Table 4).

Training of professionals on pep and availability of pep at work places

Among the respondents 53 (31%) have trained on PEP. 118 (69%) don't take any training on PEP, 73 (42.7%) of the respondents replied that they have guidelines and protocols on how to use PEP after exposure, 98 (57.3%) they don't have guidelines and protocols of PEP.

117(68.4%) of the respondents respond that PEP is available at working hour, 23(13.5%) answered that PEP is not available at workings hours, 31(18.1%) don't know the availability of PEP.

72 (42.1%) of the respondents respond that PEP was available on weekend days and 58 (33.9%) respond that PEP not available at weekend days. The remaining 41 (24%) don't know the availability of PEP at weekend days.

PEP use among health professionals

Regarding exposure to the risk of acquiring HIV/AIDS 158 (92%) of the 171 health professionals exposed to HIV risk conditions. However, only 31 (19.6%) of the 158 exposed use PEP. The main reason reported for not using PEP were source patient HIV test result negative 76 (65.5%), negligence 29(25%) and unaware of the existence of PEP six (5.1%) (Table 5).

profession	HIV risk conditions							
	Body fluid		blood		Needle stick		Mucous membrane	
	Yes	No	Yes	No	Yes	No	Yes	No
Physician(16)	13(81.3%)	3(18.7%)	13(81.3%)	3(18.7%)	11(68.7%)	5(31.3%)	8(50%)	8(50%)
Health officer(11)	9(81.8%)	2(18.2%)	8(72.7%)	3(27.3%)	5(45.4%)	6(54.6%)	7(63.3%)	4(36.7%)
Nurse (106)	77(72.6%)	29(27.4%)	86(81.1%)	20(18.9%)	54(50.9%)	52(49.1%)	39(36.8%)	67(63.2%)
Midwife(24)	23(95.8%)	1(4.2%)	21(87.5%)	3(12.5%)	8(33.3%)	16(66.7%)	17(70.8%)	7(29.2%)
Laboratory(14)	6(42.8%)	8(57.3%)	13(92.8%)	1(7.2%)	6(42.8%)	8(57.2%)	2(14.3%)	12(85.7%)

Exposure to body fluid at p value=.007
Exposure to blood p=0.675
Exposure to needle p=0.260
Exposure to mucosemembrane p=.003

Table 2: Health professional's exposure to HIV risk conditions in Mekelle town Occupational exposure by category of professions.

measurements	needle stick injury		mucosememrane	
	Frequency	Percent	Frequency	Percent
wash with soap and water	47	55.9	61	83.56
wash with alcohol and iodine	7	8.3	3	4.1
squeeze for more bleeding	10	11.9	0	00
visiting VCT	7	8.3	5	6.8
seek PEP	7	8.3	2	2.7
report to head person	1	1.2	0	00
doing nothing	4	4.76	1	2.7
Other	1	1.2	1	1.4
Total	84	100.0	73	100.0

Table 3: Measures taken immediately after exposure.

Question	Response	Frequency	Percent
Knowing the presence of PEP	Yes	167	97.7
	No	4	2.3
HIV testing before starting PEP	Yes	160	93.6
	No	11	6.4
Naming of PEP	Correctly mentioned	53	31
	Wrongly mentioned	49	28.7
	Mentioned nothing	69	40.4
Maximum time limit to initiate PEP	Correct answer	93	54.4
	Wrong answer	67	39.2
	Don't know	11	6.4
Duration of PEP	Correct answer	140	81.9
	Wrong answer	14	8.2
	Don't know	17	9.9

Table 4: knowledge of health professionals to PEP.

Reasons for not using PEP	Frequency	Percent
Source patient HIV test results become negative	76	65.5
Negligence	29	25
Unaware of presence of PEP	6	5.12
Lack of understanding the value of PEP	3	2.58
Fear of stigma and discrimination	1	0.8
Uncertaininty about confidentiality	1	0.8
Total	116	100

Table 5: Reasons for why the health professional didn't use PEP.

For those who received PEP 31 (100%) they receive HIV counseling and testing before they start PEP, 12 (38.7%) of these started PEP they start the first PEP with less than 6hours, 6 (19.4%) started with 7-12 hours, 12 (38.7%) started with in13-24hours, one (3.2%) respond that he or she started the first PEP 25-48 hours. The mean time to initiate PEP among the respondents was 13.35 hours 25 (80.6%) of those who started PEP completed their treatment, 6 (19.4%) discontinued their PEP. 5 (83.3%) of those who discontinued are due to adverse effect of the drugs and 1 (16.7%) was due to source patient turned to be HIV negative.

29 (93.5%) of those received PEP get HIV testing at 3 and 6 months after completion of the PEP on these 28 become negative and one become HIV positive.

Factors associated with utilization of PEP

Factors associated with Post exposure prophylaxis use were assessed

Variable		P- value	COR(95% CI)	X^2
Age	20-29	.919	.919(.179-4.722)	1.299
	30-39	.591	.615(.105-3.620)	
	40-49	.799	1.263(209-7.649)	
	50-59		1	
Sex	Male	.921	.960(.426-2.162)	.010
	Female		1	
Marital status	Single	.999	1	2.271
	Married	.999	3.44(.4432-2.3446)	
	Divorced	.999	9.23(.7012-10.664)	
	Separated	1	-	
	Widowed		-	
Profession	Physician	.076	7.8(.804-75.640)	5.121
	Health officer	.414	2.889(.226-36.868)	
	Nurse	.396	2.483(.304-20.259)	
	Midwife	.286	3.421(.357-32.783)	
	Laboratory		1	
Risk of HIV infection	Yes	.521	2(.24-16.634)	2.088
	No	.639	.5(.028-9.076)	
	I don't know		1	
Training on PEP	Yes	.008	2.969(1.336-6.597)	7.14♣
	No		1	
Having guide line on PEP	Yes	.621	.818(.369-1.813)	.245
	No		1	
Score of knowledge	Good	.3	.225(.013-3.769)	1.211
	Fair	.272	.203(.012-3.483)	
	Poor		1	
Service year cat	<10year	.854	1.084(.461-2.547)	.034
	>10year		1	
Patient cared daily	<35	.602	1.277(.509-3.207)	.272
	>35		1	

NB ♣ shows significant association,
- Implies no event

Table 6: Bivariate analysis of socio demographic & behavioral factors associated PEP utilization in Mekelle town.

based on the developed conceptual framework. Cross tabulation was first used to assess the association between dependent and independent variables. Variables which reach a P value of less than 0.05 were considered as having associated with PEP utilization. Accordingly, no independent variable had statistically significant association with PEP utilization (p>0.05) except training on PEP. Then binary logistic regression was used to show the associations as shown in the following Table 6.

The Bivariate analysis was performed using chi square (x2) test. Accordingly, no independent variable was statistically significant (P<0.05) except training on PEP. The odds of PEP utilization were 3times higher among those who trained on PEP when compared with those who were not trained on PEP (COR=2.969, 95% CI= 1.336-6.597).

Multivariate logistic regression analysis was also done to see the association among variables. According to the multivariate logistic regression analysis result, ever trained on PEP was found to have significant association with PEP utilization (AOR=2.864, 95% CI 1.152 -7.122). On other variables, the analysis did not show an association (Table 7).

Discussion

This study assessed prevalence of occupational exposure to HIV, post exposure prophylaxis use among health professionals and factors associated with utilization of PEP in Mekelle town.

This study detected high levels of occupational exposures. Ever needle stick and sharp injuries (49.1%) and 28.07% experienced injury in the last year. This is greater than with previous similar studies done in Ethiopia in Addis Ababa on Occupational Exposure to HIV and Post-Exposure Prophylaxis [5] and Harari regional state Dire Dawa administrative council [18]. The difference could be due to difference in study population this study only included health professionals with direct patient care. But those studies included non health professional auxiliary staffs.

And it is lower than a study from South Africa on blood borne pathogen exposure risk among surgeon (70%) (9), and finding from similar research on high risk for occupational exposure to HIV and utilization of PEP in Pune India (81.5%). This could be due to difference in study populations and methodology respectively. Those were only on physicians (surgeons) in the South African study and prospective study design in the Pune India study [15].

But this finding contradicts with the with finding in the Jimma zone Oromia region south west Ethiopia (60.3%) [1]; the same study population, comparable sample size, lower service and lower mean age of the respondents but high needle and sharp injury as compared to this research. However the estimated rate of needle stick injury in this study was lower as compared to WHO estimation for developing countries (2.10 injuries per person per year). The most common reason for sustaining needle stick injuries in this study was due to patient sudden movement (43.7%) followed by recapping 27%. Despite the current national infection prevention recommendation, not to recap needle it is still a common practice.

This study also detected high level of exposure to blood and body fluids (82.5%, 74.9%) respectively as compared to a research done Harari regional state and Dire Dawa administrative (28.8%, 20.2%) respectively and a research finding in Jimma zone Oromia region south west Ethiopia (44.3%, 39.1%) respectively this may be due to low service year of the respondents of these area as compared to study's

Variables	X^2	P- value	AOR	95.0% CI.For AOR	
				Lower	Upper
Age Category	1.793	.616			
20-29	.265	.606	.536	.050	5.735
30-39	.772	.380	.379	.043	3.305
40-49	.009	.923	1.099	.163	7.396
Profession	2.300	.681			
Physician	1.802	.179	4.960	.479	51.400
Health officer	.358	.549	2.258	.157	32.479
Nurse	.726	.394	2.589	.290	23.072
Midwife	.363	.547	2.114	.185	24.189
Risk of HIV infection	1.186	.553			
Yes	.224	.636	1.710	.185	15.789
No	.133	.716	.573	.029	11.414
Training pep (yes)	5.124	.024♣	2.864	1.152	7.122
Score knowledge	.718	.698			
Good knowledge	.638	.425	.257	.009	7.220
Fair knowledge	.475	.491	.311	.011	8.620
Service year category (<35)	.219	.639	1.480	.287	7.644
Constant	.532	.466	.171		

NB ♣ statistically significant

Table 7: Multivariate logistic regression analysis of PEP utilization among health professionals in Mekelle town.

participant service year and multiple procedures that can predipose health professionals to many body fluids and blood could not undertake in these area as many of the study participants were from health center.

The use of PEP among the exposed health professionals in this study is 19.6% it is in line with previous studies done in Ethiopia [1] and to a research done in the UK on PEP for HIV knowledge and experience of junior doctors [14]. But it is lower than a research finding on high risk for occupational exposure to HIV and utilization of PEP in Pune, India (72%) among the exposed [15] and HIV prone occupational exposures epidemiology and factors associated with initiation of post-exposure prophylaxis in London (79.8%) among the exposed [16-25]. The difference may be probably different in type of exposure in these the type exposures were needle stick injuries while in this study the type exposures were needle stick, exposure to blood and body fluids. And in this study health professionals started PEP after test result of the source patient. But in those studies after significant exposure they started PEP and they wait for test results of the source patient.

For those who started PEP all of them had HIV counseling and testing before commencing PEP. This is true with the Ethiopian national guideline on management of occupational exposure against HIV.

According to national infection prevention, WHO and CDC recommendations PEP treatment as much as possible should be initiated immediately after exposure within 1-2hours. Despite of these recommendations the mean time to initiate PEP drugs in this study was 13.35 hours.

80.6% of those started PEP completed their drugs. 19.4% of those who started discontinue the drugs due to adverse effects of the drugs. But this is lower than a drug discontinuation due to adverse effects of the drugs found in a teaching hospital, Pune India [15] and research report from PEP for HIV knowledge and experience of junior doctors in the UK. But this finding is in line with the estimation of CDC (17-47%) proportion of health professionals taking PEP after occupational exposure to HIV positive sources didn't complete a full 4 week course of therapy because of an inability to tolerate the drugs [6].

Concerning the post PEP HIV test result 93.3% were negative only one (3.448%) was positive. As already known PEP is not 100% effective. The protective capacity of PEP drugs when taken properly is 80%. So this finding is consistent with of estimation of protection capacity of PEP [12].

Results of both Bivariate and multivariate analysis confirmed that PEP utilization was significantly associated with training of health professionals on PEP (AOR=2. 864, 95% CI 1.152-7.122). But no other research findings that show the impact of training on PEP utilization?

Conclusions

From the findings of the study the following conclusions were summarized.

- Occupational exposures were common among health professionals in the study area;

Occupational exposures to blood, body fluids, to needle stick and sharp injuries and mucocutaneous were 82.5%, 74.9%, 49.1% and 42.7% respectively.

The recapping of the needle was still a common practice; 27% of the needle stick injuries were due to recapping

- Some unnecessary measures were taken by health professionals after needle stick or sharp injuries; 11.9% of the injuries squeezed the site for more bleeding
- The utilization of PEP among the exposed health professionals was low.
- According to this finding certain number of health professionals could not get PEP drugs for exposures that occur during duty time
- The mean time to initiate the first PEP drug after exposure was 13.35hours
- 25% of the exposed respondents were negligent to seek PEP the study

Recommendations

Based on the findings summarized under the conclusion, the following recommendations were forwarded.

1. Health facilities may strengthen and integrate infection with routine services through providing training to all health professionals so as to decrease the high occupational exposures.
2. Health facilities are expected to have the standard protocol for infection prevention to avoid unnecessary practices such as recapping of needle and squeezing for more bleeding.
3. To increase the utilization of PEP, all health professionals are better to be trained on PEP
4. Health facilities are expected to be the center of available PEP drugs all the time.
5. To be on the safe side after exposure, PEP is better to be started immediately.
6. The government could introduce Health insurance for health professionals
7. Further study with designs out of cross-sectional study design is recommended.

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