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ORIGINAL RESEARCH

Assessment of Knowledge, Attitude, Practice and Associated Factors Towards Post-Exposure Prophylaxis for HIV/AIDS among Health Professionals in Health Centers Found in Harari Region, Eastern Ethiopia

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Background: Healthcare workers are at risk of acquiring human immunodeficiency virus (HIV) infections, because of occupational exposure to blood and other body fluids. Post-exposure prophylaxis (PEP) is a short-term antiretroviral treatment used to reduce the likelihood of viral infection after exposure to the blood or body fluids of an infected person. Timely PEP after exposure to high-risk body fluids in the working area can reduce the rate of transmission of HIV significantly.

Objective: To assess the knowledge, attitude, practice, and associated factors towards PEP for HIV/AIDS among health professionals in health centers in the Harari region, Eastern Ethiopia.

Methodology: A retrospective cross-sectional study was conducted using structured questionnaires from March to April 2019. The collected data were analyzed by using SPSS version 20, and the result was presented in the form of tables and figures.

Results: Of 217 participants, 51.6% were male and 75.2% were in the age group of 20–30 years. One hundred thirty (59.9%) respondents had a year of service less than 5 years, and nearly half (45.2%) of the participants had a Diploma. The study revealed that 35.02% of the participants had inadequate knowledge of PEP. About 32.26% had an unfavorable attitude towards PEP. Of 124 (57.1%) exposed respondents, 54 (68.4%) tried to get PEP service and 49 (90.7%) started to use PEP. Twenty-six (48.1%) respondents started to use PEP within 6 to 24 hours after exposure. Sex, qualification, and attitude status were found to have a significant association with knowledge regarding PEP.

Conclusion: The findings of this study indicated that a significant number of health professionals had poor knowledge and poor attitude towards PEP. Occupational exposures were common among health professionals. However, the practice of using PEP was low among health professionals. As a result, health facilities should strengthen and integrate routine PEP services by providing training to all health professionals.

Keywords: knowledge, attitude, practice, post-exposure prophylaxis, HIV/AIDS, health professionals, Harari region

Background

The major mode of transmission for Human Immunodeficiency Virus (HIV) is sexual contact, but the various modes of transmission may be classified as occupational (work setting at health care) and non-occupational. Occupational or workplace exposure is

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when someone who works in a healthcare setting is potentially exposed to material infected with HIV.[1] Healthcare workers (HCW) can be exposed to HIV by needle stick injuries or cut blood or fluid splash to their eye, mouth, and injured skin. The risk for occupational transmission varies with the type, severity of the exposure, stage of disease of source patient, length of time of contact, the potential port of entry, and presence of more virulent strains of the virus. Research findings revealed that the estimated risk for HIV transmission after injury through a needle contaminated with HIV/Acquired Immune Deficiency Syndrome (AIDS) infected blood and after mucous membrane, exposure is 0.3% and 0.1%, respectively.[2]

Post-exposure prophylaxis (PEP), is a short-term antiretroviral (ARV) treatment applied to reduce the likelihood of HIV infection after potential exposure to HIV either occupationally or non-occupationally. Within the health sector, PEP should be provided as a compressive universal precaution package; that reduces staff exposure to infectious hazards at the workplace.[2]

The US guidelines outline several requirements in determining whether the HCW should receive PEP and in choosing the type of PEP regimen. For most HIV exposures, for which PEP is given, a basic 4 weeks and two drug regimen is recommended. For HIV exposures that put an increased risk of transmission, a three-drug regimen may be recommended.[3]

The efficacy of PEP is related to the specific regimen, timing of PEP, and exposed workers' adherence to the PEP regimen. To be effective, it should be initiated within 72 hours of exposure, but more likely effective if initiated within 1 to 2 hours and not considered beyond 72 hours. However, it is not 100% effective and does not guarantee someone exposed to HIV will not become infected with HIV.[4,5] The uses of PEP after exposure depend on the knowledge and attitude of HCWs about it.[5]

However, a study regarding knowledge, attitude, and practice (KAP) about PEP was lacking in health professionals working in health centers (HCs) at Harar region, the Eastern part of Ethiopia. This would help in reducing the risk of infection for the health professionals while rendering service to the patients and help to plan and implement interventions to reduce the chance of infection and better utilization of PEP. Thus, this study was aimed at assessing the KAP of health professionals about PEP against HIV/AIDS in HCs to fill the gap on the KAP of healthcare professionals for HIV/ADIS prevention and treatment.

Methods

Study Setting

This study was conducted in Harari regional state, eastern Ethiopia. There are four governmental hospitals and eight health centers from which, 4 of them are found in Harar town and the rest in the rural part of the town. This study was conducted on health professionals of the health centers in the Harari region, from March 15 to April 1, 2019.

Study Design and Period

A cross-sectional study design was employed to assess the KAP of health professionals about PEP against HIV infection in the eight health centers of the Harari region, Eastern Ethiopia.

Sample Size Determination and Sampling Technique

The sample size was calculated using the single population proportion formula, with 50% prevalence, 5% marginal error, 95% confidence interval and since the exact number of source population was less than 10,000, correction formula was used and a sample of 197 was reached. After adding a 15% non-response rate, a final sample of 227 was found. The total number of health professionals in the health centers was 402. The sample size was then allocated proportionally to the eight health centers based on the number of health professionals in each health center (Figure (Supplementary)). Finally, participants who met the inclusion criteria were selected from the HCs using simple random sampling by using the lottery method.

Data Collection Tools and Procedures

A self-administered questionnaire was used to collect information on the KAP of healthcare professionals towards PEP. The data collection tool was adapted after reviewing different literature, guidelines, and previous studies, which were organized according to the objectives of the study. The data collection tools contain four different parts which include socio-demographic characteristics; existing knowledge about PEP, attitude, and practice towards PEP. The prepared questionnaire was pre-tested on 5% of the respondents. Before starting data collection, a brief explanation was given by the principal investigator on how to fill the questionnaire to avoid any ambiguity and misconception.

Data Processing and Analysis

The collected data was checked at the end of each data collection day for completeness and consistency and data analysis was done by using statistical package for social science (SPSS) version 20 software. Logistic regression was done to determine any association and a P-value of <0.05 was considered statistically significant. Finally, obtained results were presented using tables and charts.

Operational Definitions

Risk of exposure while at work – Exposure of HCW to blood, patient body fluids or needle prick injury or sharp injury at the workplace

HIV PEP: An anti-retroviral therapy, given in different forms after occupational exposure (OE) to HIV and will be given to HCWs if there is a percutaneous injury (for example, needle-stick or cut with a sharp object), contact with a mucous membrane or non-intact skin (for example, skin chapped or abraded or dermatitis) or prolonged contact with skin or contact that involves an extensive area of skin.[2]

Good knowledge: When the respondent correctly answers ≥75% of knowledge questions.[6]

Moderate knowledge: When the respondent correctly answers 50% to 74% of knowledge questions.[6]

Poor knowledge: When respondents correctly answer <50% of knowledge questions.[6]

Good attitude: When the respondents correctly answer >70% of attitude questions.[7]

Poor attitudes: When respondents correctly answer <70% of attitudes questions.[7]

Regimen: A course of treatment, possibly combination drugs, exercises; diets, etc. designed to bring about an important improvement in health.[8]

Universal precautions: Universally adopted measures taken before the medical procedure to avoid the risk of exposures while on work.[8]

Results

Socio-Demographic Characteristics of the Study Sample

Out of 227 participants, 217 took part in this study, with a response rate of 95.6%. More than half of the respondents 112 (51.6%) were male. Ninety-six (44.2%) were in the age range of 26–30 years. The majority of the respondents 77 (35.5%) were nurses and 124 (57.1%) had a year of service of fewer than 5 years (Table 1).

Table 1 Socio-Demographic Characteristics of Healthcare Professionals, in Health Centers of Harari Region, Eastern Ethiopia, March–April 2019

Variables	Category	Number	Percent
Age	20–25`	85	39.2
	26–30	96	44.2
	30–35	17	7.8
	36–40	7	3.2
	>40	12	5.5
Sex	Male	112	51.6
	Female	105	48.4
Profession	Physician	12	5.6
	Nurse	77	35.5
	Lab technician	35	16.1
	Public health	31	14.3
	Midwife	37	17.1
	Others	25	11.5
Year of service	0–5	124	57.1
	6–10	61	28.1
	11–15	20	9.2
	>15	12	5.5
Level of qualification	First Degree	92	42.4
	Master Degree	11	5.1
	General Practitioner	12	5.5
	Diploma	98	45.2
	Others	4	1.8
Monthly income	1000–2000	5	2.3
	2001–4000	124	57.1
	4001–6000	51	23.5
	>6000	37	17.1

Knowledge About Occupational Exposure and Universal Precaution

Most of the participants, 209 (96.3%) had information about the risk of OE. Exposures by sharp cut 171 (78.8%) and needle stick injury 167 (76.9%) were considered by the majority. Most of the respondents 207 (95.3%) have heard about universal precaution (UP) and 201 (92.6%) knew at least one type of UP. Of these, 190 (87.5%) considered hand washing before and after any procedure as one way of UP. When asked about the different measures to be taken by the health professional immediately after OE, 89 (41.0%) of the health professionals consider washing the exposed area with soap and water whereas 46 (21.2%) consider washing with alcohol and iodine (Table 2).

Table 2 Knowledge About Occupational Exposure, and Universal Precaution and Measures to Be Taken Among Health Professionals in HC in the Harari Region, Eastern Ethiopia, March–April, 2019

Variables	Category	Frequency Yes	Percent
Knowledge about OE*	Heard about the risk of occupational exposure	209	96.3
	What types of exposure?		
	Sharp cut	171	78.8
	Needlestick injury	167	76.9
	Mucosal contact	146	67.2
	Skin cut	121	55.7
Measures to be taken immediately after exposure*	Wash the area with soap and water	89	41.0
	Wash the area with alcohol and iodine	46	21.2
	Check patient and self HIV status	78	35.9
	Squeeze for more bleeding	34	15.6
	Seek PEP	21	9.7
	Report to head person	7	3.2
Knowledge about UP*	Ever heard about UP	207	95.4
	Types of protections	190	87.5
	Hand washing before and after the procedure		
	Use of Protective barrier like a glove, gowns, mask	200	92.1
	Correct handling of sharp materials	143	65.9
	Disinfection and sterilization	106	48.8
	Proper disposal of needles and waste	97	44.7

Note: *More than one answer is possible and percentages totals are based on respondents.
Abbreviations: OE, occupational exposure; UP, universal precaution.

Knowledge About Post-Exposure Prophylaxis

Almost all 210 (96.7%) of respondents had information about PEP, of these, 158 (72.8%) knew the availability of PEP in their facility, and the majority 149 (68.6%) knew PEP as the combinations of three drugs. Seventy-eight (35.9%) of the respondents mentioned that they know the regimen Tenofovir (TDF) + Lamivudine (3TC)+ Efavirenz (EFV) and/or Zidovudine (AZT)+ Lamivudine (3TC)+ Nevirapine (NVP). 53% of the respondent mentioned that the period for initiation of PEP is within 24 hours after exposure, whereas 50.7% of the respondents mentioned that PEP should be initiated within 24–72 hours after exposure. One hundred and fourteen (52.5%) of the respondents knew the recommended duration of treatments (4 weeks) (Table 3).

The overall score of knowledge questions revealed that 85 (39.17%) of the respondents had moderate knowledge about PEP followed by 76 (35.02%) who had poor knowledge and 56 (25.81%) who had good knowledge (Figure 1).

Multinomial logistic regression analysis was done to see the association among variables by using the poor knowledge category as a baseline outcome. According to the multinomial logistic regression result, sex, qualification, and attitude status were found to have a significant association with knowledge regarding PEP. Those who have a good attitude had 2.25 and 2.89 times higher chance of having moderate and good knowledge (RRR=2.25, 95% CI 1.09–4.67) and (RRR= 2.89, 95% CI 1.19–7.02) respectively. On the other hand, variables, like age, year of service, and taking training did not show significant association with knowledge about PEP (Table 4).

Attitude Towards Post-Exposure Prophylaxis

Most of the respondents 193 (88.9%) believed that HIV would be acquired occupationally. The self-risk perception question showed that 173 (79.7%) of the respondents believe that they have a risk of acquiring HIV infection occupationally. Of the total respondents, 83 (38.2%) agree that initiation of PEP after 72 hours of exposure would be effective while 59 (27.2%) disagree that staff should start PEP even if they are not willing to have an HIV test after occupational exposure (Table 5).

Table 3 Knowledge About PEP Among Health Professionals in Health Centers in the Harari Region, Eastern Ethiopia, March–April 2019

Variables	Response	Frequency	Percent
Heard about PEP	Yes	210	96.7
	No	7	3.3
Know availability in their facility	Yes	158	72.8
	No	59	27.2
Number of drugs to be combined*	Three drug combinations	149	68.6
	Two drug combinations	130	59.9
	One drug only	66	30.4
	More than three combinations	8	3.7
Regimens they know*	TDF + 3TC + EFZ or AZT+3TC+NVP	78	35.9
	TDF or AZT+EFV	40	18.4
	AZT or NVP	19	8.7
	Did not list any drug	80	36.8
Optional period of initiation*	Within 24 hrs.	115	53
	Within 24–72 hrs.	110	50.7
	After 72 hrs.	32	14.7
	Within one week	8	3.7
Duration of treatment	1week	25	11.5
	2weeks	54	24.9
	3weeks	24	11.1
	4weeks	114	52.5

Note: *More than one answer is possible and percentage totals are based on respondents.

The overall score of attitude questions results showed that the majority of respondents 147 (67.74%) have a good attitude towards HIV PEP (Figure 2). Multivariate logistic regression analysis was done to see the association among variables.

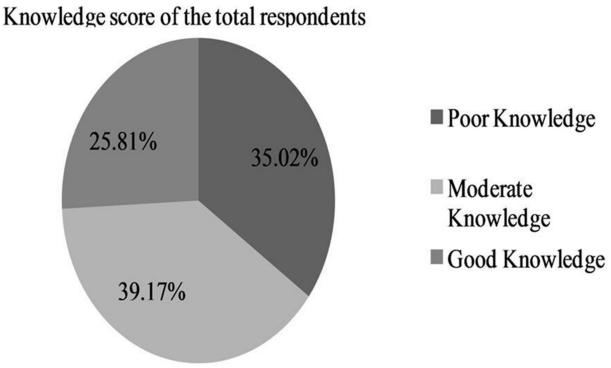

Figure 1 Overall knowledge score of health professionals in health centers in the Harari region, Eastern Ethiopia, March–April 2019.

According to the multivariate logistic regression result, knowledge status was found to have a significant association with the attitude towards PEP. The odd of PEP's good attitude were 2.29 and 2.32 times higher among those who had moderate and good knowledge when compared with those who had poor knowledge about PEP, respectively (AOR=02.29, 95% CI 1.07–4.91) and (AOR=2.32, 95% CI 1.03–5.38). On the other hand, variables, like age, sex and qualification did not show a significant association with an attitude towards PEP (Table 6).

The Practice of Post-Exposure Prophylaxis

From the total respondent, 128 (59.0%) reported that they had been exposed to HIV risk factors while they are at the workplace. Of these, 71 (55.5%) were exposed once. The two common types of encountered exposures by the respondents were needle stick injury 111 (86.7%) followed by sharp cuts 52 (40.6%) (Table 7). Of those who had exposure, 37 (28.9%) of the respondents were exposed from source patient confirmed HIV positive, 42 (32.8%) from unknown serostatus, and 49 (38.3%) from HIV negative patients. Of 79 of the health professionals exposed to unknown and sero reactive patients, 54 (68.4%) tried to get PEP service and of those 49 (90.7%) started to use PEP. Out of 49 respondents who took PEP, 42 (85.7%) had taken PEP once, and 5(10.2%) reported to use PEP two times. The major reason for not starting PEP was the fear of its adverse effects 13 (52%) (Table 8).

The majority 143 (65.8%) of respondents reported that they have had on/off service training on HIV PEP. The perceived reasons for OE to HIV/AIDS among respondents were negligence of HCWs 135 (62.2%), followed by multiple procedures at the same time/heavy workloads 121 (55.7%) (Table 9).

Discussion

The present study assessed KAP regarding PEP against HIV/AIDS. Almost all of the participants in the present study had information about the risk of OE, which is almost comparable with studies conducted in Woldia General Hospital, North-Eastern Ethiopia (95.28%),[9] Southwestern Nigeria (93.3%)[6] and Princess Marina Hospital Gaborone (97.4%),[10] but higher than the study conducted in Asella Teaching Hospital, South-East Ethiopia (88.8%).[11] The higher result observed in the current study could be due to the time gap and difference in study participants, with the majority of the participant in the current survey had

Table 4 Multinomial Logistic Regression Analysis of Knowledge and Associated Factors for Healthcare Professionals Towards PEP in Health Centers in the Harari Region, Eastern Ethiopia, March–April 2019

Variables		Frequency and Percentage of Knowledge Status				
Poor Knowledge (Baseline Outcome)						
Moderate Knowledge		**Poor**	**Moderate**	**Good**	**P-value**	**RRR(95% CI)**
Age	20–25	34 (40.5)	33 (39.3)	17 (20.2)		1
	26–30	35 (38.04)	35 (38.0)	22 (23.91)	0.551	0.79 (0.36–1.71)
	31–35	3 (18.8)	7 (43.8)	6 (37.5)	0.524	1.71 (0.33–8.92)
	35–40	1 (14.3)	4 (57.1)	2 (28.6)	0.75	1.53 (0.11 −21.14)
	>40	1 (10)	5 (50)	4 (40)	0.315	3.41 (0.31–37.5)
Sex	Male	31 (28.7)	51 (47.2)	26 (24.07)		1
	Female	43 (42.6)	33 (32.7)	25 (24.8)	0.038*	0.48 (0.24 −0.96)
Year of service	0–5	48 (39.3)	52 (42.6)	22 (18)		1
	6–10	21 (36.2)	17 (29.3)	20 (34.5)	0.122	0.47 (0.18–1.23)
	11–15	4 (21.05)	9 (47.4)	6 (31.6)	0.555	1.58 (0.35–7.18)
	>15	1 (10)	6 (60)	3 (30)	0.511	2.41 (0.17–33.42)
Qualification	Diploma	44 (44.9)	41 (41.8)	13 (13.3)		1
	BSc degree	29 (32.2)	34 (37.8)	27 (30.0)	0.929	1.04 (0.46–2.32)
	MSc degree	1 (4.8)	9 (42.9)	11 (52.4)	0.196	4.63 (0.45–47.38)
Monthly income	<4000	56 (44.0)	48 (37.8)	23 (18.1)		1
	>4000	18 (21.9)	36 (43.9)	28 (34.2)	0.137	2.04 (0.79–5.23)
attitude	Poor	32 (46.4)	24 (34.8)	13 (18.8)		1
	Good	42 (30)	60 (42.9)	38 (27.1)	0.029*	2.25 (1.09–4.67)
Ever taken training	No	27 (36.5)	29 (39.2)	18 (24.3)		
	Yes	47 (34.8)	55 (40.7)	33 (24.4)	0.807	1.09 (0.54–2.23)
Good knowledge						
Age	20–25	34 (40.5)	33 (39.3)	17 (20.2)		1
	26–30	35 (38.04)	35 (38.0)	22 (23.91)	0.49	0.71 (0.27–1.87)
	31–35	3 (18.8)	7 (43.8)	6 (37.5)	0.779	1.29 (0.22–7.72)
	35–40	1 (14.3)	4 (57.1)	2 (28.6)	0.78	1.57 (0.07–36.76)
	>40	1 (10)	5 (50)	4 (40)	0.394	3.05 (0.23–39.78)
Sex	Male	31 (28.7)	51 (47.2)	26 (24.07)		1
	Female	43 (42.6)	33 (32.7)	25 (24.8)	0.896	0.94 (0.41–2.19)
Year of service	0–5	48 (39.3)	52 (42.6)	22 (18)		1
	6–10	21 (36.2)	17 (29.3)	20 (34.5)	0.462	1.48 (0.52–4.24)
	11–15	4 (21.05)	9 (47.4)	6 (31.6)	0.113	4.00 (0.71–22.23)
	>15	1 (10)	6 (60)	3 (30)	0.386	3.61 (0.19–66.09)
Qualification	Diploma	44 (44.9)	41 (41.8)	13 (13.3)		1
	BSc degree	29 (32.2)	34 (37.8)	27 (30.0)	0.029*	2.93 (1.12–7.69)
	MSc degree	1 (4.8)	9 (42.9)	11 (52.4)	0.002*	40.32 (3.68–441.28)
Monthly income	<4000	56 (44.0)	48 (37.8)	23 (18.1)		1
	>4000	18 (21.9)	36 (43.9)	28 (34.2)	0.831	1.11 (0.40–3.12)
Attitude status	Poor	32 (46.4)	24 (34.8)	13 (18.8)		1
	Good	42 (30)	60 (42.9)	38 (27.1)	0.019*	2.89 (1.19–7.02)
Ever taken training on PEP	No	27 (36.5)	29 (39.2)	18 (24.3)		1
	Yes	47 (34.8)	55 (40.7)	33 (24.4)	0.913	0.95 (0.40–2.22)

Note: *Significant association.

Table 5 Attitudes of Health Professionals Towards PEP, in Health Centers of Harari Region, Eastern Ethiopia, March–April 2019

Questions	Response	Frequency	Percent
HIV would be acquired occupationally	Agree	193	88.9
	Disagree	20	9.2
	Neutral	4	1.8
You are one of those, at risk of acquiring HIV occupationally	Agree	173	79.7
	Disagree	33	15.2
	Neutral	11	5.1
Universal precaution methods are protective from occupational exposure to HIV/AIDS	Agree	165	76.0
	Disagree	37	17.1
	Neutral	15	6.9
Occupational exposure is avoidable by universal precaution and PEP.	Agree	136	62.6
	Disagree	52	23.9
	Neutral	29	13.4
ARV drugs are effective after occupational exposure to prevent HIV/AIDS.	Agree	125	57.3
	Disagree	75	34.6
	Neutral	17	7.8
PEP initiation after 72 hours of exposure would be effective	Agree	83	38.2
	Disagree	125	57.6
	Neutral	9	4.2
Staffs should start PEP even if they are not willing to have an HIV test after occupational exposure	Agree	127	58.5
	Disagree	59	27.2
	Neutral	31	14.3

a Diploma. Regarding types of exposure they knew, the majority identified the high-risk exposure of sharp cut and needle stick injury, which is similar to a finding reported in a study conducted in Nigeria (81.7% and 88.5% identified mucocutaneous exposure and percutaneous exposures as high risk, respectively).[12]

In the current study, less than half of the respondents had poor knowledge, which is slightly higher than a study conducted among HCWs in public health institutions in

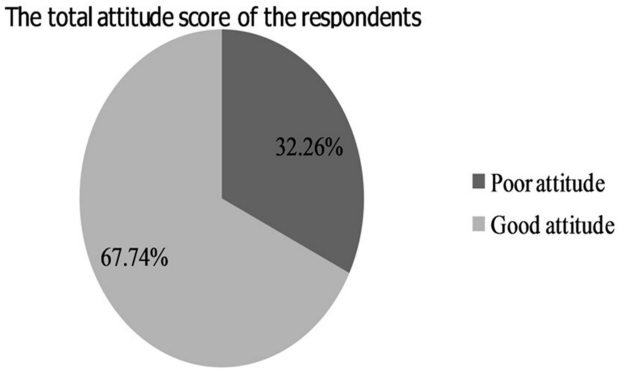

Figure 2 Overall attitude score toward PEP against HIV among health professionals in health centers in the Harari region, Eastern Ethiopia, March–April 2019.

Debre Markos town (36.1%),[7] a study conducted in Gondor, northwest Ethiopia (36.9%)[13] and a study conducted in Hiwot Fana Specialized University Hospital in Harar (17%),[14] but much lower than the study conducted in Nigeria (57%)[6] and a study conducted at Jigme Dorji Wangchuck National Referral Hospital, Bhutan (80.1%).[15] This could be due to the difference in the knowledge assessment like the availability of PEP service and training in this survey and also a difference in the study setting and the difference in health professionals involved in the study.

Self-risk perception question in the present study showed that the majority of the respondents believe that they have a risk of acquiring HIV infection occupationally which is in line with a study conducted in India where 89% of respondents considered themselves to be at risk of HIV acquisition at their workplace.[17] Almost one-fourth of the respondents did not believe that OE to HIV/AIDS is avoidable which is much higher than a study in China which showed that 10% of respondent believes OE was unavoidable.[18] More than half of respondents accept that ARV drugs are effective after OE; however, this is lower than a similar study conducted in Lagos University Teaching Hospital in Nigeria (73%).[19] This huge gap could be due to differences in knowledge and training they had since in the present study, one-third of the professionals did not attain any training. This study found that the majority of the respondents had a favorable attitude towards PEP for HIV which is comparable with the study conducted among HCW in Debre Markos town (69.8%).[7]

Practice Towards PEP

In this study, more than half of the respondents reported that they have been exposed to HIV risk conditions while they are at the workplace. This finding is higher than the study done in Botswana (53.7%),[10] Gondar (33.8%),[13] Gimbi town (50%)[16] and Cameroon (50.8%).[20] Whereas, it is much lower than a study done in Ghana (83.2%).[21] This could be because of the difference in the study area and population and the difference in the workload.

Regarding immediate measures taken after exposure, half of the respondents in the current study reported that they washed the exposed area with water and soap and one-fourth washed the exposed area with alcohol and iodine, whereas a study conducted in Debre Markos revealed that 68.6% of respondents washed the wound with soap and water and 14.9% squeezed and washed with alcohol.[7]

In the present study, almost one-tenth of the study participants did not use PEP, which is lower when

Table 6 Multiple Logistic Regression Analysis of Attitude and Associated Factors for Healthcare Professionals Towards PEP in Health Centers in the Harari Region, Eastern Ethiopia, March–April 2019

Variables		Attitude Status			
		Good	Poor	P-value	AOR(95% CI)
Age	20–25	48 (59.2)	33 (40.7)		1
	26–30	71 (75.5)	23 (24.5)	0.07	2.01 (0.94–4.28)
	31–35	11 (64.7)	6 (35.3)	0.53	0.64 (0.16–2.57)
	35–40	6 (85.7)	1 (14.3)	0.97	0.95 (0.08–11.20)
	>40	7 (58.3)	5 (41.7)	0.248	0.37 (0.07–1.99)
Sex	Male	76 (71.0)	31 (28.9)		1
	Female	67 (64.2)	37 (35.5)	0.303	0.69 (0.35–1.38)
Year of service	0–5	77 (64.7)	42 (35.3)		1
	6–10	41 (68.3)	19 (31.7)	0.553	1.32 (0.53–3.27)
	11–15	15 (75)	5 (25)	0.71	1.31 (0.31–5.45)
	>15	10 (83.3)	2 (16.7)	0.337	2.73 (0.35–21.39)
Qualification	Diploma	67 (68.3)	31 (31.6)		1
	BSc degree	58 (63.0)	34 (36.9)	0.06	0.45 (0.19–1.03)
	MSc degree	18 (81.8)	4 (18.2)	0.252	3.97 (0.37–42.16)
Monthly income	<4000	78 (62.4)	47 (37.6)		1
	>4000	65 (74.7)	22 (25.3)	0.227	1.71 (0.71–4.09)
Knowledge status	Poor	42 (56.7)	32 (43.2)		1
	Moderate	60 (73.2)	22 (26.8)	0.033*	2.29 (1.07–4.91)
	Good	38 (74.5)	13 (25.5)	0.049*	2.32 (1.03 −5.38)

Note: *Significant association.

Table 7 Exposure and Measures Taken by the Health Professionals After Exposure in Health Centers in the Harari Region, Eastern Ethiopia, March–April 2019

Questions	Response	Frequency	Percent
Ever exposed while at work	Yes	128	59.0
	No	89	41.0
Frequency of encountered exposure	Once	71	55.5
	Twice	30	23.4
	Three and more times	27	21.1
Type encountered exposures*	Needlestick	111	86.7
	Sharp cut	52	40.6
	Mucosal contact	44	34.4
	Others(splash of body fluid)	12	9.4
Immediate measures after exposures*	Washed with soap and water	72	56.2
	Washed with alcohol and iodine	32	25.0
	Check patient and self HIV status	98	76.5
	Applied pressure to stop bleeding	18	14.0
	Reported the occurrence of injury	15	11.7

Note: *More than one answer is possible and percentage totals are based on respondents.

compared with a study conducted in Botswana (74.8%),[10] a study in Bhutan (97.9%)[15] and a study from Debre Markos town (56.7%).[7] This might be due to differences in the number of those individuals who were exposed and in general due to the difference in the number of the study participants and the difference in the percentile calculation

Table 8 Distribution of Serostatus of Source Patient and Practice of HCWs Towards PEP, Among Health Centers in Harari Region, Eastern Ethiopia, March 2019

Variables	Category	Frequency	Percent
Sero-status of the source patient	Positive	37	28.9
	Negative	49	38.3
	Unknown	42	32.8
Tried to get PEP service	YES	54	68.4
	NO	25	31.6
Started to use PEP	YES	49	90.7
	NO	5	9.3
Duration of starting PEP after exposure	=<One hour	5	10.2
	6–24 hours	26	53.1
	24–72 hours	18	36.7
	After 72 hours	0	0
Completed treatment according to prescription	Yes	44	89.8
	No	5	10.2
Check their status after treatment	Yes	32	65.3
	No	17	34.7
Frequency of taking PEP	Once	42	85.7
	Twice	5	10.2
	Three times	2	4.1
	More than three times	0	0
The reason not to start PEP	Because of adverse effects	13	52
	Lack of information on the existence of service	9	36
	Because of social stigma	2	8
	Others	1	4

Table 9 Distribution of Previous Training on PEP and Perceived Reason for Occupational Exposure, Among Health Professionals in Health Centers in the Harari Region, Eastern Ethiopia, March–April 2019

Variables	Category	Frequency	Percent
Any on/off service training on PEP of HIV	Yes	143	65.9
	No	74	34.1
What do you think is the reason for the occupational exposure*	Negligence of health professionals	135	62.2
	Multiple procedures at the same time/heavy workloads	121	55.7
	Lack of knowledge on the risk	83	38.2
	Recapping of needle	97	44.7
	Uncooperative patient	105	48.4
	Not enough training on the issue	75	34.6
	Unfamiliar procedure	39	18.0

Note: *More than one answer is possible and percentage totals are based on respondents.

of this result being from the exposed participant who tried to get the service.

In this study, the major reasons for not taking PEP were fear of its adverse effects and lack of information about the existence of service. A similar study in Debre Markos Ethiopia revealed that 52.6% did not take PEP because the source patient was HIV negative and 31.5% because of negligence and unaware of PEP.[7] The study in Bhutan however showed that the major reasons were the absence of PEP service (30.2%) and lack of support to report incidents (22.6%).[15] Whereas a study from Jimma reported that 33.8% of the respondents were unaware of

the existence of PEP service and protocol, 23.2% had a lack of understanding on the value of reporting exposures, and 32.2% had a fear stigma and discrimination.[22] Reasons for the observed differences of findings between different research results could be due to the differences in the level of awareness between the different population, economic status, qualification of the study population and time difference of the studies, sample size differences, and study setting difference (most of the literature compared with the current study were conducted in a hospital).

According to the present study, sex, qualification, and attitude status were found to have a significant association with knowledge regarding PEP. On the other hand, the study in Debre Markos shows a strong association of profession and attitude with knowledge,[7] the study in Asella shows an association of young age, female gender, low educational status, low work experience with knowledge regarding PEP,[11] the study in Kenya shows the association of gender, level of education and job cadre with knowledge[8] whereas the study in Gimbi,[16] Jimma zone[22] and Buhta[15] has shown no association between knowledge and other variables (attitude).

Conclusion

The majority of health professionals have heard about OC, UP, and PEP and have a good attitude towards PEP. However, the majority had moderate and poor knowledge and also poor practice regarding PEP, as is evidenced by unnecessary measures taken and under and/or improper utilization of PEP. In general, the findings of this study revealed there is a gap in the KAP of health professionals towards PEP for HIV. The information gap present with the professional can be enhanced by training the professionals more about PEP and awareness programs and a proper guideline should be implemented for better utilization of the PEP. Besides, more efforts should be done by the institutions as well as the health professionals to reduce the risk of exposure while rendering service.

Abbreviations

AIDS, acquired immune deficiency syndrome; ARV, anti retroviral; HCWs, healthcare workers; HCs, health centers; HIV, human immunodeficiency virus; KAP, knowledge, attitude and practice; OE, occupational exposure; PEP, post-exposure prophylaxis; UP, universal precaution.

Data Sharing Statement

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate

A letter of clearance was obtained from Haramaya University, College of Medical and Health Science, School of Pharmacy, and submitted to the Harari Health Biro to obtain permission to conduct the research. All data obtained in the course of the study were kept confidential and used solely for the study. Moreover, the questioner was given to the health professionals based on informed consent and their will. Further, they were able to choose which questions to answer. The respondents were informed that the results of the study would be analyzed at the group level; that no individual would be able to be identified; and that data would be used for research purposes only.

Consent for Publication

Not applicable

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Author Contributions

All authors contributed to data analysis, drafting or revising the article, have agreed on the journal to which the article will be submitted, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

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The authors declare that they have no conflicts of interest for this work.

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