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Assessment of Knowledge and Practice on Infection Prevention among Health Care Workers at Dessie Referral Hospital, Amhara Region, South Wollo Zone, North East Ethiopia

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Abstract

Background: A large fraction of the world's illness and death is attributable to communicable diseases. Sixty-two percent and 31% of all deaths in Africa and Southeast Asia, respectively, are caused by infectious disease. An infection prevention and control measure ensures the protection of those who are vulnerable to acquiring an infection in the general community.

Objective: The aim of this study was to assess infection prevention knowledge and practice among health care workers at Dessie Referral Hospital, Amhara region, South Wollo, North East Ethiopia, June 2016.

Methods: Institution based cross-sectional study was conducted in Dessie Referral Hospital from February 2016 -June 2016. Simple random sampling technique was used to collect data from health care workers. Pre-tested and structured questionnaire was used to collect data from randomly selected health care workers at Selam Hospital using 5% of the sample size and necessary amendments were made. Proportions, tables and graphs were used to summarize the collected data. Each filled questionnaire was checked for its completeness, accuracy and consistency.

Result: The study was done on 208 healthcare workers with respondent rate of 208(100%). All respondents 208(100%) knew about personal protective equipment. Among respondent 182(87.5%) of health care workers knew use of an alcohol based antiseptic for hand hygiene is as effective as soap and water. All of the respondents 208(100%) used glove and had gown. Nearly all of respondents 205(98.6%) told that they wash hands with antiseptics/soap after work.

Conclusion and Recommendation: Generally, the results of this study revealed that 198(95.19%) of health care workers at Dessie Referral Hospital had good knowledge and 182(87.5%) had good practice of infection prevention. Less than one fourth of health care workers (17.7%) were trained on infection prevention. Strengthening the knowledge of HCW (Health Care Workers) and giving training on infection prevention practice for HCW is recommended.

Keywords: Health care workers; Infection prevention

Abbreviations HCW: Health Care Workers; HCAIs: Health Care Associated Infections

Introduction

Health-Care Associated Infections (HCAIs) remain a major challenge to the health care system constituting over 25% of infection rates in the hospital setting and result in significant mortality, morbidity, and economic burden worldwide [1,2]. One of the major reasons for these high rates of HCAIs is the lack of infection control programs, which have been neglected due to limited resources, competing priorities, and other barriers [3].

A large fraction of the world's illness and death is attributable to communicable diseases [4]. A total of 62% and 31% of all deaths in Africa and Southeast Asia, respectively, are caused by infectious disease [5]. Inadequate sanitary conditions and poor hygiene practices play major roles in the increased burden of communicable disease within these developing countries [6]. According to the Environmental Protection Agency (EPA) 3.2 million tons of infectious wastes are generated from health and health related facilities yearly [6].

Infectious waste is a major public concern and should be addressed as effectively as possible with the widespread concern over the possible risk of deadly infectious disease like Tetanus, HIV, Hepatitis B, Hepatitis C, in addition Leptospirosis, Q Fever, Hepatitis A, Salmonellosis, allergic reactions, Dermatitis and skin diseases, bronchitis, influenza, trachoma/eye disease intestinal parasitic infection [7-9], Scabies [10], Toxoplasmosis [11].

In developing countries, workers are working without any safety measures and they are handling waste and dirty without adequate personal protection, hence coming into direct contact with hazardous infectious agents [12].

Statement of the problem

Infection control refers to all policies, procedures and activities which prevent or minimize the risk of transmission of infectious disease at work places [13]. An infection prevention and control measure ensures the protection of those who are vulnerable to acquiring an infection in the general community [14].

In an effort to raise awareness and provide guidance in combating HCAIs in resource limited settings, the World Health Organization (WHO) launched the Global Patient Safety Challenge: Clean Care is Safer Care campaign [15]. A cornerstone of the program is to decrease HCAIs through improving hand hygiene among healthcare workers. While the WHO campaign has outlined a framework, hand hygiene adherence continues to be problematic even though it is a simple and highly effective measure to reduce HCAIs [16,17].

In healthcare settings with high HIV prevalence and poor TB infection control practices, Mycobacterium tuberculosis can be rapidly transmitted to patients and health care workers (HCWs); immune-compromised are at greatest risk for the development of active TB disease [18,19]. In many resource limited settings, infection control procedures for suspected and active TB cases are minimal due to lack of infrastructure capacity(e.g. poor ventilation, lack of individual rooms, lack of ability to separate patients with and without TB disease, etc.), personal protective equipment (i.e.,N95 respirators), and laboratory diagnostic capacity for TB [20]. Patients with suspected or active TB are most commonly admitted to the general wards without regard to TB status leading to comingling of patients with active TB disease and highly immune compromised persons such as those with HIV/AIDS [18,20].

Identifying existing infection control practices among health care workers is a key first step in developing a successful infection control program. The purpose of this study is to assess the knowledge and Practice of healthcare workers on infection prevention measures in Dessie Referral Hospital, North East Ethiopia.

Significance of the study

Infection prevention and control measures ensure the protection of infection for those healthcare workers and in the general community. Occupational related studies are lacking given that the possible exposure of workers to various work related hazards might exist. Information to policy makers to improve the working condition as a result is limited. Even though Assessment of knowledge, attitude and practice of health care workers on infection prevention in health institution done at Bahir Dar and Addis Ababa [13-29] to the extent of our knowledge there is no study done on health care workers in Dessie Referral Hospital, Ethiopia. Therefore, this study was aimed to assess the knowledge and practice of health care professionals towards infection prevention in Dessie Referral Hospital, North East Ethiopia.

Objectives

General objective:

- To assess infection prevention knowledge and practice among health care workers at Dessie Referral Hospital, Amhara region, South Wollo, Northeast Ethiopia, June 2016.

Specific objectives:

- To determine the level of knowledge of healthcare workers on infection prevention
- To determine the level of practice of healthcare workers on infection prevention

Methods and Materials

Study design and period

Institution based cross sectional study was conducted among health care workers at Dessie Referral Hospital from February, 2016 to June, 2016.

Study area

The study was conducted in Dessie town, South Wollo zone of Amhara Regional state, North Eastern Ethiopia. Dessie town with a distance of 400 km from the capital city of the county, Addis Ababa and 471 Km far from Bahir Dar which is the capital city of Amhara regional state. The town has a north latitude and east longitude of 11°8′ and 39°38′ respectively. Dessie Referral Hospital is found in Dessie town kebele. There are 411 health care workers in Dessie Referral Hospital, among those 249 were nurse, 42 were GP, 59 were laboratory technician, 44 were midwifes and 23 were others(emergency surgeon, health officer, anesthetics, specialists and pharmacies).

Sample size determination

The sample size for the study was calculated by using single population proportion formula considering 95% level of confidence, 5% margin of error and 5% non-response rate, proportion knowledge 84.2% and practice 54.2%, Study conducted in Bahir Dar City [13]. We found a sample size of 208.

Sampling procedure

The total number of Health Care Workers in Dessie Referral Hospital was obtained from Dessie Referral Hospital medical office. All the professions of the HCWs of the hospital were included in the sampling procedure. The study participants were obtained by calculating proportions from respective professions as shown in the table below. Then the study units were selected by simple random sampling method using lottery method.

The proportion of sample size for each profession was Nurse total number 249 then by proportion formula we got 249(126), lab technologist 59(30), midwifery 44(22), GP 36(18) others 23(12) (Table 1).

Variables

- Socio-demographic characteristics (Age, sex, religion, marital status, income, educational status).
- Previous training on infection prevention
- Availability of personal protective equipment
- Knowledge of health care providers on infection prevention
- Practice of infection prevention by health care providers

Health care workers	Frequency	Percentage
Nurse	126	60.6
Lab. Technologist	30	14.4
Midwifery	22	10.6
GP	18	8.7
Others	12	5.7
Total	208	100

Table 1: Sample size for each profession.

Operational definitions

Knowledge: Respondents who respond 50% and above of questions to asses knowledge as having 'good Knowledge', while those who respond below 50% of questions to assess knowledge as having 'poor Knowledge'.

Practice: Respondents who fulfill 50% and above of questions to asses Infection prevention practice was as 'good practice', while those fulfill below 50% of questions to asses Infection prevention practice was as 'poor practice'.

Prevention: The act of HCWs before any procedure done.

Data collection procedures

Socio-demographic data, Knowledge and practice about infection prevention and other relevant information's related to the study were collected from each study subjects in the work area using structured questionnaire.

Data analysis and interpretation

Data was checked for completeness, cleaned manually. The primary data was done by filling the row data depending on the variables manually by using tally method. Data was summarized using frequency tables and graphs.

Data quality control

The questionnaire was Pre-tested to ensure the quality of data and for improvement of data collection tool. Then some modification of the tool was done. Irrelevant questions were removed. Some questions were rewritten again to make them cleaner. Supervision during data collection were done to understand how the data collectors had been handed the questionnaire and each filled out questionnaire were checked for its completeness, accuracy, clarity, consistency on daily basis.

Ethical considerations

Ethical clearance was obtained from Wollo University, departmental ethical review committee and official letter of co-operations were provided to Dessie Referral Hospital prior to data collection. All participants were informed about the purpose and significances of the study to get the consent of the respondents and their full right to refuse, withdraw or completely reject part of all of the study. Participants name were not documented or recorded to maintain confidentiality throughout the study. Informed consent was also obtained from each study participants before collecting any data. And the information obtained from the study participants were kept confidential.

Results

Socio-demographic characteristics of health care workers

Variable	Frequency	Percentage
Age		
20-30	94	45.20%
31-40	66	31.70%
41-50	42	20.20%
>50	6	2.90%
Sex		
Male	112	53.80%
Female	96	46.20%
Year of work with your current status		
<1 year	34	16.30%
1-3 year	81	39%
3-5 year	47	22.60%
>5 year	46	22.10%
Monthly income		
1000-3000	76	36.50%
>3000	132	63.50%

Table 2: Socio demographic status of respondents in Dessie Referral Hospital, Dessie town, North East Ethiopia, 2016EC.

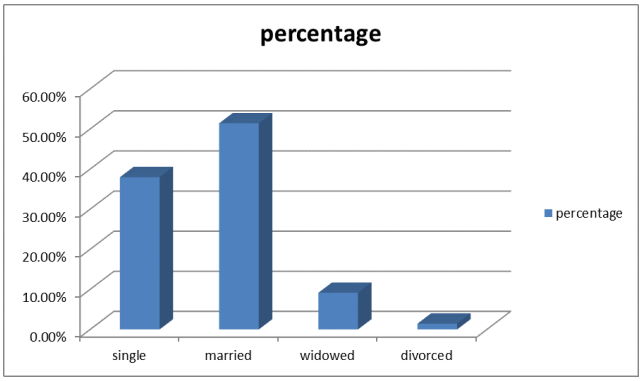

Figure 1: Marital status of respondent in Dessie Referral Hospital, Dessie Town, 2016.

The study was done on 208 health care workers with respondent rate of 208(100%), 45.2% of the respondents are in age group of 20-30 years

and 2.9% were age group of >50. Among the respondents 112(53.8%) were males, 107(51.4%)respondent are married, 52.8% of health care workers are orthodox. 147(70.72%) of the respondents educational status were degree, 1(0.48)of the respondents were specialist. 81(38.9%) of health care workers were 1-3 years of work in their current status, the rest 34(16.3%) were <1 year. 132(63.5%) of respondents had >3000 birr of monthly income, the rest 76(36.5%) have 1000-3000 birr (Table 2).

Among respondents 37.98% were single 51.4% were married 9.13% were divorced 1.44% were widowed (Figure 1).

Among respondents 70.72% were degree 24% were diploma 4.8% were masters and 0.48% were specialist (Figure 2).

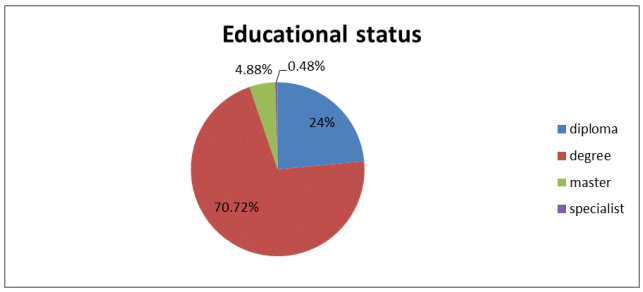

Figure 2: Educational status of respondents in Dessie Referral Hospital, Dessie Town, North East Ethiopia, 20008 EC.

The respondents had religion of the orthodox 52.8%, Muslim 33.6% protestant 13.4% others 0.2% (Figure 3).

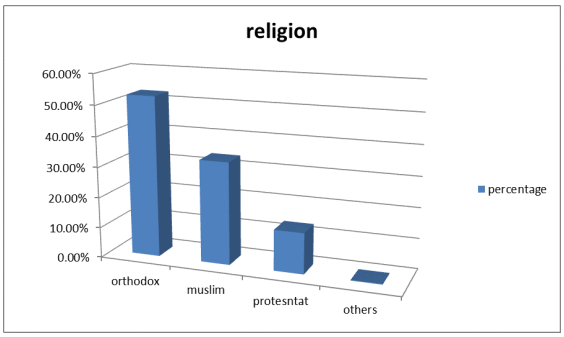

Figure 3: religion of the respondents in Dessie Referral Hospital, Dessie Town, North East Ethiopia, 20008EC.

Job related factors

Among 208 health care workers 140(67.3%) have guide lines for handling infectious materials. Among 208 respondents 126(60.6%) were nurse, 22(10.6%) respondents are midwifery 30(14.4%) were lab technician and 18(8.7%) of respondents were GP. From those 208 respondents 201(96.6%) were working >3 days per week. the rest 12(5.7%) were 3 days per week. Among 208 the respondents 204(98.1%) are permanently employed (Table 3).

Variable	Frequency	Percent
Guide lines for handling infectious materials		
Yes	140	67.30%
No	68	32.70%
Current technical Qualification		
Resident/GP	18	8.70%
Nurse	126	60.60%
Midwife	22	10.60%
Lab technician	30	14.40%
Other	12	5.70%
Number of working days per week		
1	0	
2	0	
3	7	3.40%
>3	201	96.60%
Type of employment		
Permanent	204	98.10%
Contract	4	1.90%

Table 3: Job related factors of respondents Dessie Referral Hospital, Dessie town, North East Ethiopia, 2016.

Knowledge of health care workers

Among the respondent 208(100%) knew about personal protective equipment. 200(96.16%) respondents heard about infection prevention. From the respondents 194(93.3%) knew about healthcare-associated pathogens can be found on normal, intact patient skin, the rest 14(6.7%) do not know about this. Among 208 respondent 190(91.3%) of health care workers knew use of an alcohol based antiseptic for hand hygiene is as effective as soap and water if hands are not visibly dirty. Among respondents 37(17.8%) of them Participated training on infection prevention, and about 203(97.6%) of respondents knew as sharp instruments are source of infection. Among the respondents 208(100%) knew about how to handle sharp instruments and about personal protective equipment does protect being infected. Among 208 respondents 206(95.19%) respondents were knew about highly infectious wastes (Table 4).

Variables	Frequency	Percent
Know about personal protective equipment		
Yes	208	100%
No	0	
Heard about infection prevention		
Yes	200	96.16%
No	4	3.84%
Healthcare-associated pathogens can be found on normal, intact patient skin		

Yes	194	93.30%
No	14	6.70%
Use of an alcohol based antiseptic for hand hygiene is as effective as soap and water if hands are not visibly dirty		
Yes	190	91.30%
No	18	8.70%
Participated in any training program about infection prevention		
Yes	37	17.80%
No	171	82.20%
If yes when		
Before starting the job	9	24.30%
After starting the job	28	75.70%
Know about sharp instruments are source of infection		
Yes	203	97.60%
No	5	2.40%
Know about how to handle sharp instruments		
Yes	208	100%
No	0	
Know about personal protective equipment does protect being infected		
Yes	208	100%
No	0	
Know about highly infectious wastes		
Yes	198	95.19%
No	10	4.81%
TB is carried in airborne particles that are generated from patients with active pulmonary TB		
Yes	208	100%
No	0	

Table 4: knowledge of respondents in Dessie Referral Hospital, Dessie Town, North East Ethiopia, 20008 EC.

Practice of health care workers

Among 208 respondents 208(100%) were use glove and have gown. From 208 respondents 165(79.33%) of respondents were wear other personal protective equipment's in your work place, 43(20.67%) were not. From 208 respondents 182(87.5%) of were wash hands with antiseptics/soap after work. From those respondents 177(85.1%) of health care workers were clean the site before starting any procedure, 31(14.9%) are not. Among 208 respondents 88(42.31%) of respondents were change the cloth after work. Out of facility sterilization technique 202(97.12%) were use Steam sterilization and 2(0.96%) were use others (Table 5).

Variables	Frequency	Percent
Use glove		
Yes	197	100%
No	11	
You have gown		
Yes	208	100%
No	0	
Wear other personal protective equipments in your work place		
Yes	165	79.33%
No	43	20.67%
Wash hands with antiseptics/soap after work		
Yes	182	87.50%
No	26	14.50%
Clean the site before starting any procedure		
Yes	177	85.10%
No	31	14.90%
Change the cloth after work		
Yes	88	42.31%
No	120	57.69%
Facility sterilization technique		
Boiling	0	
Steam sterilization	202	97.12%
Others	6	2.88%

Table 5: Practice of the respondents in Dessie Referral Hospital, Dessie Town, North East Ethiopia, 2016.

Figure 4: Hand washing habit of respondents after work in Dessie Referral Hospital, Dessie town, North East Ethiopia, 2016.

Those respondent wash after work accounts 87.5% and the rest 14.5% don't wash their hand after procedure (Figure 4).

Discussion

This study showed that 95.19% of Health care providers were good knowledge and 4.81% were poor knowledge about Infection prevention. This study finding is high when compared with finding from Bahirdar City which revealed that 84.2% of the Health care providers were knowledgeable [13]. This discrepancy may be due to sample size, study setting and characteristics of study participants and availability of training program. It's also high when compared with study conducted in Addis Ababa revealed that 69% of HCWs had good knowledge on infection control [26]. This difference also may be due to sample size study setting and characteristics of study participants

This study showed that 96.16% respondents were heard about infection prevention whereas study conducted on Compliance with Infection Prevention Guidelines by Health Care Workers at Ronald Ross General Hospital Mufulira District in Zambia which is 86% which show 10% increment in my study [25]. It might be due to training or guide lines availability.

This study finding indicated 87.5% of health care providers were good practiced on infection prevention while 17.7% were poor practice. This study finding is high when compared with finding from BahirDar City which revealed that 54.2% of the Health care providers were safe practice while 45.8% of them had unsafe practice [13]. This difference may be due to setting of the study, training and infection prevention guideline availability.

This study found that 17.8% of health care providers had taken training on infection prevention. This finding low when compared to WHO survey conducted on Healthy Hospitals Project in Ecuador in which overall training in occupational health and safety was 35.9% [22]. It might due to economic status difference to train health care workers

Concerning hand washing 87.5% of health care providers used soap and water for hand hygiene. This study finding indicates poor practice when compared with similar study conducted in Bahir dar city which was 98% use soap and water, whereas only 8.8% used disinfectant solution for hand washing practice [13]. This difference may be due to awareness, materials (supply) and study setting, lack of training and lack of infection prevention guideline.

Limitations

Generalization of the findings of this study needs careful consideration since it is institution based study.

Conclusion

Generally, the results of this study revealed that 198(95.19%) of health care workers at Dessie Referral Hospital had good knowledge and 182(87.5%) of the HCW had good practice on infection prevention. We recommend that strengthen the knowledge of HCW on infection prevention by giving training, Supervision and monitoring their practice toward infection prevention.

Authors' Contributions

RA designed and conducted the study. KA and OS Advised the study, drafted the manuscript, revises it critically and submitted it. All authors have read and approved the final version manuscript.

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