

Knowledge, Attitude and Practice of Infection Prevention among Health Care Workers in Public Health Facilities in West Guji Zone, Oromia, Ethiopia, 2018

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ABSTRACT

Background: Infection prevention and control play an essential role in patient safety and improve the quality of universal health coverage. The problem is more common in developing countries as compared to developed countries. This study aimed to assess knowledge, attitude and practice of infection prevention among health care workers in public health facilities in West Guji Zone, Oromia, Ethiopia, 2018.

Methods and Materials: Facility-based descriptive cross-sectional study was done from may 1-30, 2018. Data were collected by a self-administered structured pretested questionnaire from 203 health care workers. The health care workers were selected through a stratified sampling technique. After the data were checked for completeness, cleaning and coding were performed. The data was entered into Epi-Info version 3.5.2 and analyzed using statistical package for social sciences (SPSS) version 20.0. The data was summarized by descriptive statistics using the frequency, percentage, and graphs.

Results: A total of 201 Health care workers were participated in the study, with the response rate of (99%). The proportion of Health Care Workers about infection prevention who was knowledgeable, had a positive attitude, and safe practice was 120(59.7%), 82(40.8%), and 110(54.7%), respectively. From the respondent, 169(84%) of health care workers were use glove in daily activities and 32(16%) of health workers did not use a glove in their daily activities.

Regarding potentially infectious and susceptible to infection 164 (81.6 %) and 37 (18.4%) of Health care workers think that both of them and patient/staff were infectious and susceptible to infection, respectively. Among the respondents, 138 (68.7%) of health care workers were not recapped needles after use and 71(31.3%) of health care workers recap needles after use. From study participant 174(86.6%) of health care workers were discarded needles and other wastes to their container.

Conclusion: Generally, the result of this study revealed the level of knowledge, attitude, and practice of health care employees for infection prevention was low. The health care facility at which a study conducted should update health care worker's awareness by providing training services on PPE utilization and proper waste disposal system to increase the quality of health care services by preventing infection.

Keywords: Attitude, Knowledge, Practice, Infection prevention, Bule Hora

Lists of Abbreviation: HCF: Health Care Facilities; HBV: Hepatitis B Virus; HCV: Hepatitis C Virus; HCW: Health Care Worker; HIV: Human Immune Deficiency Virus; HAI: Hospital-Acquired Infection; IPC: Infection Prevention and Control; KAP: Knowledge, Attitude and Practice; MCH: Maternal and Child Health; OPD: Outpatient Department; PEP: Post Exposure Prophylaxis; PPE: Personal Protective Equipment; SPSS: Statistical Package for Social Sciences; WHO: World Health Organization

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INTRODUCTION

Health care-associated or nosocomial infection is an infection that patients acquire in the health institution during care services that were not present or no sign and symptom development at the admission time. The common possible nosocomial infection: tuberculosis, urinary tract infection and gastroenteritis are the commonest nosocomial infection [1,2].

Infection prevention and control can be defined as the scientific approach and practical solution established to prevent harm caused by infection to the patients and health care. World Health Organization said that no countries and health care facilities at all, even the most advanced and sophisticated health care are not free of the problem of healthcare-associated infection [3].

Many studies revealed that standard precaution plays an important role in infection prevention. These essential elements of standard precaution include hand hygiene, use of adequate personal protective equipment, decontamination, cleaning of instruments, sterilization use of antiseptics, and proper disposal of sharp and waste disposal [4-6].

A lot of researchers in different areas have studied the knowledge, attitude, and practice of health care workers towards infection prevention. From the study done at the tertiary care hospital of Tripura in India which assessed Knowledge, Attitude, and Practice about hospital-acquired infection among health care personnel revealed that 94.8% believed that working in hospital exposed them to infectious diseases [7]. From a study conducted in Qatar; knowledge, attitude, and awareness (KAP) of medical students towards the infection prevention guideline were inadequate. Only 48.44% of the respondents were aware of standard isolation prevention [8].

Previous studies investigated that knowledge and attitude of health care workers toward infection prevention was good, but the practice of infection prevention was low that need further investigation. From the study conducted in Zambia, The mean score in infection prevention and control practice was 48.88 % [9], whereas in Nigeria 50.8% of health care had poor practice towards infection prevention [10].

The finding of this study will:

- Help us to assess the knowledge, attitude, and practice of health care workers towards infection in public health institutions of West Guji Zone, Oromia Region.
- Be useful for all concerned bodies for the preventing infection.
- Help for future researcher as a reference.

METHODS AND MATERIALS

The Study Area and Period

The study was conducted in governmental health institutions that were found in the Southern part of Ethiopia. The zone has an estimated population of one million three hundred ninety thousand and three hundred twenty three. It roughly lies between 5°35'N 38°15'E/5.583°N 38°25'E & an altitude of 1716 meters above sea level. The zone has nine woredas, one General hospital, two district hospitals, and forty two health centers. Bule Hora town is the capital city of West Guji zone which is located 467 km from Addis Ababa, the capital city of Ethiopia. The total health care

workers in the zone are 557. The study was conducted from May 1-30, 2018 [11-16].

Study Design

Institutional-based descriptive quantitative cross-sectional study was done.

Source population: All health care workers found in public health facilities of West Guji Zone.

Study population: The sampled health care workers in the selected health facility of West Guji.

Inclusion criteria: Health care workers who were involved in daily patient care were included.

Exclusion criteria: Those who had maternal and annual leave were excluded.

Dependent variables

- Knowledge, Attitude and Practice of infection prevention

Independent variables

- Sociodemographic factors
- Knowledge related factors
- Attitude related factors
- Practice related factors
- Health institutions factors

Operational Definitions

Infection Prevention: Measures practiced by health care workers in health care facilities to decrease transmission and acquisition of infection.

Knowledge: The state of knowing or understanding particular facts of health care workers about infection prevention. The knowledge part has 18 questions. Those who correctly answered at least 9 questions were considered as knowledgeable whereas those who answered below 9 questions were considered as not knowledgeable. To assess HCW knowledge 0 or 1 score was given depending on the question.

Attitude: The way of behaving, thinking, and feeling of health care workers towards infection prevention. The attitude part has 10 questions. Those who correctly answered equally to or above 5 questions were considered as having a positive attitude whereas those who answered below 5 questions were considered as having a negative attitude. To assess HCW attitude 0 or 1 score was given depending on the question.

Practice: The way by which health care workers were doing towards infection prevention.

The practice part has 13 questions. Those who correctly answered equally to or above 7 questions were considered as having a safe practice whereas those who answered below 7 questions were considered as having unsafe practice. To assess HCW practice 0 or 1 score was given depending on the question.

Sample Size Determination

The sample size (n) was calculated by using a single proportion formula. By considering the following assumption: P = 76.4% (0.764) from the attitude of previous study done [17,18].

Margin of error (d) = 5% Where n= minimum sample size required for the study

Z= standard normal distribution (Z=1.96) with confidence interval of 95% and $\alpha=0.05$

By using single proportion formula, the required sample size can be:

$$n = \frac{(Z\alpha/2)^2 \times P(1-P)}{d^2} = \frac{(1.96)^2 \times 0.764(1-0.764)}{(0.05)^2} = 277$$

Since our source population was less 10,000 the correction formula was used.

The final required sample size was:

$$nf = \frac{n}{1+n/N} = \frac{277}{1+277/557} = \frac{277}{1.497} = 185$$

Then, 10% of non- response rate added and the final sample size is 203.

Sampling Procedure

West Guji zone public health institution was divided into two strata (the hospitals & the health centers). First, three woredas (Bule Hora, Kercha and S/Bargudaa) were selected by the lottery method, and Bule Hora General Hospital and Kercha Primary Hospital were also selected.

Ela Dima, Jarsa Sake, Kercha, Gerba and Bule Hora health centers were randomly selected health centers from the selected woredas. Stratified sampling was used to select the required sample size. The final sample size was proportionally allocated to their study population.

Data collection: Data was collected using a self-administering questionnaire. Three Nurses were collected the data and the investigators followed the activities of collected data completeness and clarity. The data was collected for one month and all health care workers like General Practitioner, Health Officer, Nurse, Midwife, Laboratory technician, pharmacy, and Radiologist were included.

Data Quality control: To maintain the quality of data, 5% of the questionnaire was pretested. An amendment was done to ensure their accuracy and consistency or validity and reliability before data collection. Orientation was being given to the data collectors by the principal investigator and the investigator has controlled all activities and collected for data completeness and clarity.

Data processing and analysis: Data were checked manually for its completeness. Then it was coded, cleaned and entered in Epi data version 3.5 and analyzed using statistical package for social sciences (SPSS) version 20.0. The quantitative data was summarized by descriptive statistics using the frequency, percentage, and graphs.

Ethical considerations: Ethical clearance was obtained from the Ethical Review Board of Bule Hora University. A Verbal consent from each study subject was obtained. Information was secured after a detailed explanation of the main purpose of the study. Confidentiality of the information forward from the subjects was kept by omitting names of the study subjects from the questionnaire and a large effort was made to maintain the privacy of the respondents during the interview.

RESULTS

A total of 201 Health care workers were participated in the study, with the response rate of (99%). Among Health care workers 141 (70.1%) were female and 60(29.9%) were male (Table 1).

Concerning the infection prevention, 174 (85.6%), 147(73.1%), and 66 (32.8%) of them correctly knew that handwashing, gloving, and reporting exposure to blood as the component of good infection prevention respectively. Among the study participants, 164 (81.6%) of them were used glove to pass sharp instruments and 37(18.4%) were not used glove hands to pass sharp instruments. From the respondents, 95 (47.26%) of them had used hand-free techniques to pass sharp instruments to reduce the risk of infection. About 71(35.3%) of respondents were using a patient's body for placing the instrument and 130 (64.7%) of respondents were not use the patient's body for placing the instrument (Table 2).

Among respondents, 160(79.6%) of health care workers think that antiseptics were sources of infection. The finding of this study showed that, 103 (51.2%) of the health care workers think that re-gloving was not advisable for a single procedure and 98 (48.8%) of them were not. As this study, 83(41.3%) and 79 (39.3%) of health care workers were advise re-gloving for procedures containing a high chance of contamination and takes longer duration, respectively.

Regarding chlorine solution preparation, among the respondent 139(69.2%) of health care workers said that one part of concentrated bleach was added to nine parts of waters to prepare 0.5% of chlorine solution. Regarding potentially infectious and susceptible to infection 164 (81.6 %) and 37 (18.4%) of Health care workers think that both of them and patient/staff were infectious and susceptible to infection, respectively.

Concerning the attitude of handwashing, among study participant 153(76.1%) of health care workers said that wearing gloves replaces handwashing and 48(23.9%) of them said that wearing

Gloves were not replacing handwashing. From the respondents 147(73.1%) of health care workers think that hand washing between each patient was necessary and 54(26.9%) think that handwashing between each patient was not necessary because it does not affect clinical outcomes. About 151 (75.1%) of the study participant said that it was necessary to use always water which was safe to drink for handwashing and 50(24.9%) of the participant said that using water that was safe to drink was not necessary for handwashing.

Among the respondent 138 (68.7%) of health care workers were not recap needles after use and 71(31.3%) of health care workers recap needles after use. From study participant 174(86.6%) of health care workers were discard needles and other wastes to their container and 27(13.4%) of them were not discard needles and other wastes to their container (Table 3).

Table 1: Socio-demographic characteristics of Health Care workers at West Guji, 2018 (n=201).

Characteristics	Variable category	Frequency (%)
Age	21-25	85 (42.3)
	26-30	95 (47.3)
	>30	21(10.4)

Religion	Orthodox	65 (32.3)
	Muslim	37 (18.4)
	Protestant	88 (43.8)
	Others	11 (5.5)
Salary	501-2000	21(10.4)
	2001-4000	98 (48.8)
	>4000	82 (40.8)
Work Experience	0-1 year	28 (13.9)
	2-3 year	86 (42.8)
	≥ 4year	87 (43.3)

Table 2: Frequency knowledge characteristics for the assessment of the knowledge, attitude, and practice among health careworkers in the West Guji zone, Ethiopia, 2018 (n=201).

Variable	Variable category	Frequency (%)
Do you use hand antiseptic	Yes	164(81.6)
	No	37(18.4)
Using antiseptic before carrying for highly susceptible patient	Yes	83(40.3)
	No	118(59.7)
After examining or carrying for highly susceptible patients	Yes	113(56.2)
	No	88(43.8)
Do you use a glove in your daily activities	Yes	169(84)
	No	32(16)
In blood pressure and temperature measurement	Yes	28(14)
	No	173(86)
In injection and blood drawing	Yes	120(59.7)
	No	81(40.3)
During physical examination	Yes	66 (32.8)
	No	135(67.2)
Shaving of hair around the operating site is necessary during a surgical procedure	Yes	153(76.1)
	No	48(23.9)
Trimming of hair around the surgical site is necessary during surgical procedure	Yes	53(26.4)
	No	148(73.6)
No need for shaving or trimming	Yes	13(6.5)
	No	188(93.5)
Drapes should be applied in dray and widely prepared skin	Yes	188(93.5)
	No	13(6.5)

Table 3: Frequency of practice characteristics for the assessment of the knowledge, attitude, and practice among health care workers at the West Guji zone, Ethiopia, 2018 (n=201).

Variable	Variable category	Frequency (%)
Hand washing before each patient contact	Yes	130 (64.7)
	No	71(35.3)
Hand washing after each patient contact	Yes	121(60.2)
	No	80 (39.8)
Hand washing before leaving home	Yes	79(39.3)
	No	122(60.7)
Following guideline alcohol use solutions antiseptics.	Yes	130(64.7)
	No	71(35.3)
Removing bracelets and rings before beginning hand hygiene.	Yes	144(71.6)
	No	57(28.4)
Written guidelines for those exposed HBV, HCV, and HIV.	Yes	109(54.2)
	No	92(45.8)
Written guideline on waste disposal	Yes	107(53.2)
	No	94(46.8)

Accidentally injured by needles	Yes	66(32.8)
	No	135(67.2)
I will squeeze and let it bleed	Yes	45(22.4)
	No	156(77.6)
I will report to the next	Yes	51(25.4)
	No	150(74.6)
I will use PEP	Yes	113(56.2)
	No	88(43.8)

DISCUSSION

This study was done to assess the knowledge, attitude, and practice of infection prevention among health care workers in the Public health facilities of West Guji Zone. Having adequate knowledge of HCW was essential for controlling and preventing infection. The current study finding revealed that 120 (59.7%) of HCW were knowledgeable and 81 (40.3%) were not knowledgeable about infection prevention.

This study finding was relatively similar to study findings done in Nepal (57.1%) and Alansar General Hospital, Saudi Arabia (60.4%) [14]. The possible reason might be due to the similar operational definition scale for both study and the same methodology like similar data collection tools for the second finding. However, the finding was lower compared to study finding done in Zambia (83.21%) [9], Debra Markos (84.7%) [19,20], and Dessie (86.4%) [17]. This may be due to the difference in a study setting and study population.

The current finding revealed that 164(81.6%) of respondents were used hand antiseptic as infection prevention. This finding was lower compared to the study finding done at Afar Referral Hospital, 87.9%. The reason for these differences may be due to the study population; which was done at referral hospital and scale of definition greater than 75% as good knowledge.

Health care workers should wear gloves when there was contact with different blood, saliva, mucous membrane, and non-intact skin. A glove cannot replace handwashing and act as a barrier against infectious microorganisms for both HCW and client. Despite this, finding from the current study done, only 120 (59.7%) were worn glove during injection and blood drawing procedure. This means that about 40.3% of HCW was not worn glove during working with infectious procedures that transmit the infection from HCW to a patient and vice versa. This finding was lower compared to the study finding done in Gondor University Referral Hospital, 88.7% wear gloves during risky procedures [16]. The possible justification could be due to different study populations; the study done in Gondor was only at a referral hospital and also sample size variation between two studies.

The positive attitude towards infection prevention was one of the most pillars for infection prevention and control. However, the findings from the current study indicate that less than half (40.8%) of HCW had a positive attitude and 59% of them had a negative attitude towards infection prevention respectively.

This study finding was lower compared to the study done at 46.7% in west India [21-25]. This might be due to methodology; the study in west India was done at the regional hospital, had better data collection techniques, and sample size variation between study.

This finding was very lower compared to the study done at Jimma University Teaching Hospital, 82.3% [21,22], in India, 90% [17],

and Zambia, 81.3% [9]. The possible justification might be due to the study setting and population. The current study was done at primary health care level and general hospital and among varieties of health care workers whereas the previous study was done at teaching referral hospital and only done among Anesthesia health profession.

Decontamination was one of the instrumental processes that remove different microorganisms to make instruments safe for handling and reuse. The current finding shows that more than two-thirds (69.2%) of health care workers think that one part of bleach was added into nine parts of water for 0.5% of chlorine solution preparation. This indicates that 30.8% of the respondent was not applying chlorine solution preparation correctly and this may make either didn't kill microorganism effectively or damaged instruments. This finding was higher compared to the study done by West Arsi, (56.3%) [23-25] and in Debra Markos, 48% [18] and Addis Ababa, 56.3% [20]. The possible reason might be due time gap in both previous studies done and less sample size in a study done at Debra Markos.

Regarding the attitude of handwashing, wearing gloves does not substitute hand washing. Despite this, the current study revealed that 153 (76%) of the participant said that wearing gloves replaces handwashing, and 48 (24%) of participants said that wearing gloves was not replaces handwashing. There was a high presence of germs that was not removed mechanically and cause illness to the health care worker. This finding was lower compared to the study done by Debra Markos, 63.3% [18]. The reason could be due to methodologies like better questionnaire development and quality control and the study was done at a referral hospital in the previous study.

The safe practice was the practice that does not harm the recipient, exposé providers to at-risk, and does not result in any waste that dangerous for the other people. However, the current study revealed that; 110 (54.7%) of HCW had safe practice and 91(45.3%) had unsafe practice. These results in more or fewer supports study done at Debra Markos 57.3% had a good practice [18], and the University of Gondor, 57.4% [16]. The possible reason might be due to a similar rating scale definition and time gap. The other possible reason could be varieties of professionals were included in both studies. This finding was higher compared to the study finding done in Nepal, 48.2% [4]. The possible explanation could be sample size variation between two studies and a previous study only done in nursing professionals.

Appropriate handwashing was very important for the prevention of the spread of infection. The current study revealed that 121 (60.2%) of respondents wash their hands after each patient contact. This means 39.8% of HCW by them was not protected against germs. This finding was a lower compared study done at Debra Markos, 66.7% [18], and Wolaita Sodo Otona teaching Hospital, 77.1% [23]. This could be attributed to methodologies

like study population differences and health facility characteristics. The current study was done on a different level of health care.

Recapping a needle was one of the malpractice that put providers at risk of blood-borne disease. From the current finding, 138(68.7%) of respondent recap needles after use. Recapping of needles only allowed if immediate disposable not possible to avoid carrying unprotected sharps. This finding indicates that nearly two-thirds of the respondent highly infectious diseases for needle stick injuries. This finding was higher compared to the study done in the University of Gondar, 40.8% recap needles always [6] and Wolaitta Sodo 44.6% [24] and Dubti Referral Hospital, 60.44% [19]. The possible reason might be due to the current study was done at the primary health care level and one General Hospital whereas the previous study was done at a referral teaching hospital. In the previous studies also a smaller sample size in Dubti Referral hospital.

“All health care workers are responsible for managing wastes in a manner that poses a minimal hazard to clients/patients, visitors, staff, individuals, and family” [25]. From the current study finding; 107(53.2%) of the study participants said that there was the presence of guidelines of waste disposable. 46.8% of the study participant said that there was no guideline for waste disposal. Inappropriate waste management and disposal could pose a risk of infection to health workers, clients, and communities especially contaminated waste. This finding is a lower compared study done in Wolaitta Sodo, 99.7%. This could be attributed to the study area; the previous study was done at a referral hospital and sample size variation between studies. This finding was higher compared to study in Debra Markos Referral Hospital 45.3%. It might due to the higher sample size in the present study.

CONCLUSION

The study had shown that nearly two-thirds of health care workers were knowledgeable about infection prevention and only less than half of the health care workers had a negative attitude towards infection prevention. Nearly above half of the health care workers had safe practices for infection prevention.

This study is very important as it gives some baseline information about information for the administrative concerned bodies and for the health care provider to improve their practice to provide good care to the patient.

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AUTHOR CONTRIBUTIONS

Belda Negessa conceptualized the idea, and Belda Negessa, Girma Tufa, and Zelalem Jabessa analyzed the data. Belda Negessa wrote the original draft. Girma Tufa and Zelalem Jabessa supervised the overall study. Girma Tufa prepared the manuscript and all authors contributed to data analysis, drafting or revising the article.

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