



Standard precaution practices towards Infection Prevention and Associated Factors Among Health Professions in Public Hospitals, North Shoa, Amhara National Regional State, Ethiopia.

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Abstract

Background: Standard precautions are deliberate actions taken in health care settings to prevent the transmission of certain pathogens from patient to patient, patient to health professions and health professions to patient and provide quality and safe care for all.

Though, much research have been conducted globally, but no scientific study documented on standard precaution practices and associated factors in the study area. Therefore this study was assessed the infection prevention and control practices and associated factors, and the result of this study could be used to improve the quality and safety of health care by providing baseline data to design evidence-based interventions in the studied health facilities.

Objective: The main objective of the study is to assess practices of health professions on standard precautions and associated factors in Public Hospitals, North Shoa, Amhara National Regional State.

Methods: Facility based cross-sectional study design using quantitative method of data collection was conducted from January,20 - February,30/2015 among 260 health professions. Structured self administered questionnaires and observational checklist were used to collect the data. The data were entered to computer using SPSS version 16.0. Univariate analysis was used for frequency distribution of key items and multiple attributes for outcome variables were checked for its association by using bivariate analysis/ odds ratio. Statistical significance of the findings were checked using p value < 0.05 and 95% confidence interval.

Result: A total of 247 health professions were participated yielding the response rate of 95% having 1.5 to 1 male to female ratio. The findings showed that, among 247 health professions 211(85.4%) respondents were knowledgeable on standard precaution. The overall hand hygiene practice was 78(31.6%) and utilisation of personal protective equipment was 137(55.5%). In regards to injection and sharp segregation practice, those 197(79.8%) respondents were practicing safe injection and almost all 141(97.6%) health professions were using safety box for sharp waste segregation.

Conclusion: Even though health professions had enhanced infection prevention and control practices, there were suboptimal hand hygiene practices and personal protective equipment utilisation in the study health care facilities. Therefore, onsite training and monitoring on hand hygiene practices and personal protective equipment utilisation to standard precaution practice should be recommended.

Key words: Practice, Standard Precautions, Health Care Workers

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List of Acronyms

AD	Auto disable (syringe)
AIDS	Acquired Immune Deficiency Syndrome
ARHB	Amhara Regional Health Bureau
CASH	Clean and Safe Health Facilities
CDC	Center for Disease Control and Prevention
HCAIs	Health Care-Associated Infections
HAPCO	HIV/AIDS Prevention and Control Organization
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HCWs	Health Care Workers
HH	Hand Hygiene
HICPAC	Hospital Infection Control Practices Advisory Committee
HIV	Human Immunodeficiency Virus
HP	Health Profession
IP	Infection Prevention
IPC	Infection Prevention and Control
MCH	Maternal and Child Health
NGOs	Non Governmental Organizations
PEP	Post Exposure Prophylaxis
PPE	Personal Protective Equipment
SPSS	Statistical Package for Social Science Research
TST	Time, Steam and Temperature
UP	Universal Precautions
WHO	World Health Organization

Chapter One: Introduction

1.1 Background

Infection Prevention and Control (IPC) is an important part of effective risk management program to provide appropriate standard of quality and safe care for patients and the occupational health of staffs. In addition to preventing avoidable infection, there is a legal obligation to take appropriate steps to protect patients and staffs from harm. Infection prevention and control in a healthcare setting requires a comprehensive and coordinated program designed to prevent and control healthcare-associated infections (HAIs) (1, 2).

The major mode of transmission of hospital-acquired infections is by pathogens transferred from one patient to another through healthcare workers (HCWs) who do not follow standard precautions. Both the patients and the health professionals (HPs) are at a major risk of these infection (3).

Health professionals are at direct risk of exposure to blood and other body fluids during the course of their job. Consequently, they are at risk of infection of blood borne viruses including hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV) and more than 40 other pathogens (4).

Occupational exposure to blood can result from percutaneous (needle stick or other sharps injury) and mucocutaneous injury (splash of blood or other body fluids into the eyes, nose, or mouth), or blood contact with non-intact skin (3, 5).

In 1987 the Centre for Disease Control and Prevention (CDC) developed standard precautions to protect both HCWs and patients from infection with blood-borne pathogens in the healthcare setting (6).

The term "standard precautions" is also termed as "universal precautions", as it expands the coverage of universal precautions by recognizing that any body fluid may contain contagious and harmful microorganisms (7).

In 1995, the CDC's Hospital Infection Control Practices Advisory Committee (HICPAC) introduced the concept of standard precaution, which synthesizes the major features of standard precautions and body substance isolation into a single set of precautions to be used for the care of all patients in hospitals regardless of their presumed infection status. Blood, certain other body fluids (e.g., semen; vaginal secretions; and amniotic, cerebrospinal, pericardial, peritoneal, and synovial fluids), and tissues of all patients should be considered potentially infectious (6).

Infection prevention and patient safety in health care settings is a nationwide initiative that involves the regular implementation of recommended infection prevention practices in every

aspect of patient care. Such practices include hand hygiene, safe injection, personal protective equipment, sharp waste management, among others (8-10).

Healthcare-associated infections (HCAIs) have been reported to be a serious problem in the healthcare services as they are common causes of illness and mortality among hospitalized patients including HCWs (8, 11).

Practices with these standard precaution is the best way to prevent air, blood and other body fluids born infections by reducing the risk of exposure to air, blood and other body fluids in health care setting (9).

The level of practice to standard precautions by HCWs may differ from one type of HCW to another. The differences in practice to standard precautions of HCWs may be influenced by their varying type of training, the absence of enabling environment in the health institution such as; lack of constant running water or shortage of personal protective equipment (PPE). These would lead to poor practice to standard precautions (9).

At the national level and within the health care facility, IPC is essential for the well- being and safety of patients, families, health care professionals, and the community (12). Effective measures should be developed to identify, prevent, and control infections.

In Ethiopia, where the health care services are largely covered by mid level health professionals, assessing the necessary practices or the knowledge on standard precaution and associated factors in hospitals as early as possible can give ways to manage the limited resource available in the facilities.

1.2 Statement of the Problem

The risk of transmitting infections in health care setting is higher if basic IPC practices are not accomplished and the underlined factors which increase HCAs are low knowledge and practices towards standard precautions (9).

The World Health Organization (WHO) report estimates that 2.5% of HIV and 40% of HBV is a result of occupational exposure. This is more important in developing countries where there is a shortage of standard reporting protocols and underreporting is high as over one-third incidents go under reported, so the number of individuals affected is much higher than reported (13).

Globally, WHO estimates that every year unsafe injections and needle stick injuries cause at least 8-16 million hepatitis B infections, 2.3-4.7 million hepatitis C infections and 160,000 HIV/AIDS (acquired immune-deficiency syndrome) infection (14).

In United state of America HCAs affect nearly 2 million hospitalized patients annually and is both costly and potentially life-threatening (15). Developing countries have about 20 times the risk of contracting a nosocomial infection compared with developed countries(16). Nosocomial infection rates ranges from 1% in developed countries to more than 40% in some developing countries, including Sub-Sahara Africa (17).

The distribution of the problem is global but it is more palpable in the developing world, including our country, where precautions are low, needs attention and action to improve the HCWs infection prevention knowledge and practices in health care setting (18).

Data from National Surveillance System for Health Care Workers (NaSH) show that nurses sustain the highest number of percutaneous injuries. However, other health care workers, including doctors, midwives and laboratory personnel, who work in health facilities also are at risk of exposure to serious, potentially life- threatening infections (19, 20).

The same is true in Ethiopia, that the study conducted on this topic among HCWs in public health facilities of Mekelle Special Zone, Northern Ethiopia, showed that only 42.9% of HCWs had good practice to standard precautions. This leads to exposure of 60.2% of the HCWs to splash of blood or body fluid on their mucus membrane (i.e. eye, nose or mouth) and 22.2 % of the HCWs to sharp or needle stick injury in one-year(21).

Much research has been conducted concerning this topic globally, but no scientific study documented on practices and factors associated with standard precaution in the study area. Therefore, this study was assessed the standard precaution practices towards IPC among health professionals and associated factors influencing these practices in public hospitals, North Shoa, Amhara Regional State.

Chapter Two: Literature Review

2.1 Literature Review

Employing standard precautions means taking precautions with everybody. If precautions are taken with everyone, health care workers do not have to make assumptions about people's lifestyles and risk of infection. Health care workers should have the right to be able to protect themselves against infection, whether it is HIV, Hepatitis or anything else (22, 23). Clients have also the right to get safe service.

Health care workers are increasingly at risk of becoming infected with serious blood borne viruses and many other multiple drug resistance bacterial infections. The greatest risk is for HCWs (physicians, nurses, midwives and laboratory personnel) that directly contact with patient, their body fluids and sharp materials (24, 25).

The benefit of IPC in good health delivery and patient satisfaction ensures less expenditure on health care in any country. It is a policy that every country achieves at least 70% practices to standard precaution (26).

Many studies were conducted on practices of HCWs towards standard precautions worldwide, of those:-

A study in Ghana, showed that knowledge in IPC among Healthcare workers was 51.0% (27).

A study on awareness and practice to standard precautions amongst health workers in Lagos, Nigeria, showed that, only 42% of the respondents practice the standard precautions (28).

The recommended Standard precautions consist of :- Hand Hygiene, Personal Protective Equipment (PPE), Sharps Management, Management of Needle stick Injury, Linen Handling and segregation, Blood and bodily fluid Spillage management, Decontamination of Equipment and environment and safe injections (8, 9). Believing that hand hygiene practice, utilization of Personal protective equipment, safe injection and sharp segregation at the site of work can show the desired outcome of standard precaution in the study area.

2.1.1 Hand Hygiene

According to the United States Centers of Disease Control and Prevention (CDC), "Hand washing is the single most important means of preventing the spread of infection" (29)

Five moment hand hygiene practice of HCWs showed significant reduction of HCAs, that estimated from 15% to 30%. Hands should be washed with none antimicrobial or an antimicrobial soap and water when hands are visibly soiled or contaminated, if not visibly soiled or contaminated, hand-rubbing with aqueous alcohol is comparable. And the key moments of

hand hygiene are before starting the procedures, after procedures and contact with bodily fluids, after touching a patient, immediately after removing gloves and after touching a patient's surroundings should be practiced (30, 31).

In 1992, The New England Journal of Medicine report reminded us, one of the most effective, simple, and yet difficult to implement for all hospital personnel to wash their hands between every patient, and the study in an intensive-care unit showed that hand washing rates were as low as 30% and never went above 48% (29).

Worldwide, the overall hand hygiene practice in different HCWs and health-care facilities were 38.7% averagely (32).

A study done in University of Geneva Hospital in Switzerland revealed hand washing compliance rate ranging from 23% -87% in different health care workers (33).

Related study conducted in Ethiopia showed that, 61.5% always practice hand washing after any direct contact with patient, 34.4% practice often and the remaining 4.1% practice seldom. The reason for these low practice were, water and soap were not available at patient care areas (21).

Another study done by Nigat project and Engender health in Ethiopia showed that health care workers didn't usually wash their hands on arrival to work place and before putting on glove; even though, it is well practiced between clients before leaving work place (34).

2.1.2 Personal Protective Equipment

Protective barriers, now commonly referred to as personal protective equipment (PPE), have been used for many years to protect patients from microorganisms present on staff working in the health care setting. More recently, with the emergence of HIV/AIDS and HCV and the resurgence of tuberculosis in many countries, utilization of PPE now has become important for protecting staff and customers. These are :- Gown, face masks, eye protectors, leg protectors or boots and disposable gloves or heavy-duty gloves (33, 35).

In Ethiopia the recent study conducted on HCWs showed that, 87.6% had ever wore at least one type of PPE while providing patient care or caring equipments. Among the participants who used PPE, almost all HCWs (99.4%) were using working gown regularly and 73.4% of the respondents used gloves for all procedures that necessitate donning glove. On the other hand, 31.1% of the healthcare workers were using gloves when caring all patients that require patient care regardless of their disease condition. The overall utilisation of PPE was 35.6% (36).

2.1.3 Safe injection

World Health Organization define safe injection as one that does not harm to the recipient, does not expose the provider to any avoidable risk and does not result in waste that is dangerous to other people (37).

The World Health Organization estimate that at least 50% of the 12 billion injections administered in the developing world each year are unsafe and serious health risk to recipients, health workers and the public (22). Use of new, single use syringe and needle provides high level of safety to the recipients. However, unreliable and insufficient supplies might lead to the equipment being reused. Injuries from sharp devices have been associated with the transmission of more than 40 pathogens, including HBV, HCV, and HIV (14, 20).

Among 35 million health care workers worldwide, about 3 million experience percutaneous exposure to blood-borne pathogens each year; 2 million to HBV, 0.9 million to HCV and 750,000 to HIV. These injuries may result in 15,000 HCV, 70,000 HBV and 1000 HIV infections and more than 90% of these infections occur in developing countries (38).

In Ethiopia, the study done in the prevalence of unsafe injection were 74%, 32.4% of health care workers sustain sharp or needle stick injuries in one year and 64% of these injuries were deep or penetrating injuries. As of the reports of injection safety survey in Ethiopia lack of supply of syringes, needles and equipment was considered as a reason for few of the unsafe practices (39).

Previously in Ethiopia a study conducted on HCWs shows that, 57 % of HCWS were practicing safe injection and 43 % were unsafe practice. And 19.5 % of health care worker had sharp or needle stick injury within one year (34).

Another study showed that, 22.2 % of the HCWs exposed for sharp or needle stick injury in the last one-year, because of carelessness, recapping of used needles and bending needles by HCWs (21).

2.1. 4 Sharp waste segregation

It is important to segregate and properly contain syringes and needles at the point of use in sharps container that is puncture and leak proof and that is sealed before it is completely full. Unsafe sharp waste segregation causes between 5% and 28 % of needle stick injuries (40).

Interventions like risk communication, managing sharps waste in efficient, safe and friendly way can reduce rate of needle stick injury to health care workers, clients and the community at large (39, 41). After closing and sealing, sharps containers must not be opened, emptied, reused, or sold. Four commonly used methods to destroy filled safety boxes or to keep them away from

people are: incineration (usually this is the best option), burning in a metal drum (next best option), open burning (if incineration or burning in a drum or hearth is not possible), and burying without burning (least safe option unless the burial pit is extremely secure) (18).

World Health Organization estimated that, regarding sharp waste segregation practice of HCWs were only 53.7 % of HCWs use safety box for needle collection after injection (38).

A study conducted in South India on practices of standard precautions among health care professionals at tertiary care hospitals showed that, the majority of the participants 87.6% segregate used needles and sharp objects into designated containers (42).

A study done in Addis Ababa health facilities showed that, 84% of health care workers dispose used needles in open plastic bucket and 54% of HCW's were observed while they were recap needles and also found that chlorine solutions were prepared and used in a very weak strength (18).

A related study done in Ethiopia showed that, 79.5% of HCWs discarding used needles and other sharps in a safety box (21).

2.2 Conceptual Framework

Practice to IPC depends on knowledge and training of personnel, coupled with availability of equipment/supplies for IPC practice ensure the needed practices at the health facility as explained in the diagram.

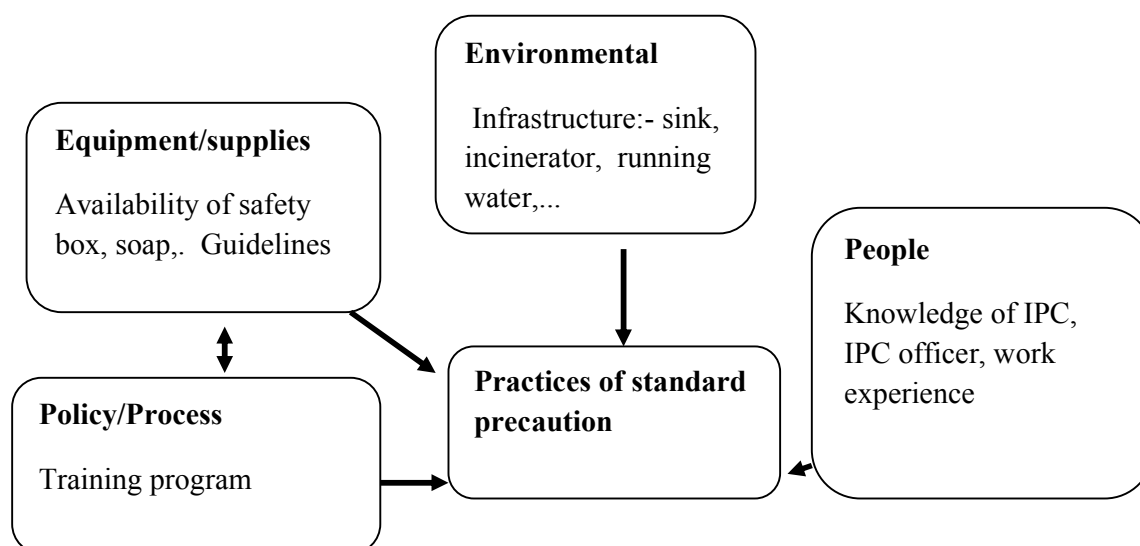


Figure 1: Conceptual frame work of Some factors associated with practice to standard precaution (27).

2.3 Significance of the Study

The literature review highlights hospital acquired infections in developing countries has always been there, it is becoming one of the areas which get attention by health providers, programmers and evaluators.

Many infectious organisms have been there for many years and continue to be a common reason for poor and ill health of health professionals and customers.

Health care workers, planners, managers and evaluators should not ignore this life threatening situation. On top of these, unless appropriate standard precautions is in practice health care facilities can be the source of infection and epidemic disease for the community at large.

In countries with limited resource, it is important to develop the health care workers knowledge and practices to standard precautions. This improves the quality and safety of health service for the health providers and consumers.

However, no scientific study documented on assessing the status of standard precaution related practices of health professionals and factors in the study health facilities. Therefore, this study was assessed the practices of health professionals to standard precaution and identify associated factors for safe or unsafe practices. The result of this study could be used by the hospitals' management, evaluators and other stakeholders in planning and targeting appropriate evidence-based measures to improve practice to standard precautions among health professionals. So it would have a significant input in identifying and improving the pattern of standard precaution at the hospitals level in the study area and beyond.

Chapter Three: Objectives

3.1 General Objective

- ❖ To assess practices of standard precaution among health professionals and associated factors in public Hospitals in North Shoa, Amhara National Regional State.

3.2 Specific Objectives

- To determine practices of health professionals on standard precaution.
- To determine factors affecting practices of health professionals to standard precaution.

Chapter Four: Methods And Materials

4.1 Study Area and Period

The study was conducted from January,20 – February,30/2015 in North Shoa zone public hospitals, North Shoa, Amhara Regional state.

North Shoa Zone have a total population of 2,093,554 who get health care service from one referral hospital, three primary hospitals, 86 privet health sectors including one hospital, 88 health centres, 389 health posts and neighbouring health facilities. The mother language in the zone is Amharic. Of religions in the area, Orthodox Christian is the majority followed by Muslims and few Protestant.

4.2 Study Design

This study employed facility based quantitative cross-sectional study design.

4.3 Population

4.3.1 Source Population

The source population were all health professionals , who were working in the four public hospitals (Debre Birhan referral hospital, Alem Ketema Enat primary hospital, Mehal Meda primary hospital and Ataye primary hospital), North Shoa, Amhara National Regional State during data collection time.

4.3.2 Study Population/Sample Population

All health professionals (doctors, nurses, laboratory personnel, midwives and emergency surgery officers), who have direct contact with patients, body fluid, specimen and medical devices such as sharps including syringes, scalpels and lancet in the study area were included.

4.3.3 Inclusion and exclusion criteria

Exclusion criteria

- Health professionals who were seriously ill at the time of data collection.
- Health professionals who were working of administrative works.

4.4 Sample Size and Sampling Technique

Public hospitals, North Shoa Zone are four in number (Debre Birhan referral hospital, Alem Ketema Enat primary hospital, Mehal Meda primary hospital and Ataye primary hospital) and

having a total of 260 health professionals. All HCWs in the facilities at the time of data collection were included.

4.5 Data Collection Procedure

All data was collected by principal investigator (laboratory technologist), eight diploma nurses from Woreda by using Self-administered questionnaires and observational check list which was adopted from study done in Bahir Dar City Administration in 2014 on assessment of knowledge, attitude and practice of HCW on standard precaution and another literatures was used to collect data from the HCWs of the facilities (Kelemua G, et al, 2014).

A self-administered questionnaire was divided into four parts. The first part asked about socio-demographic of the respondents, second guideline and norms, third knowledge of the respondent and fourth practices to standard precaution of health professionals in the study health facilities.

In this study, health facilities and HPs activities related to infection prevention practices were observed prior to introducing the objective of the study. Emergency, outpatient, laboratory, delivery, injection and dressing, MCH and Inpatient rooms (N=110) were included for observations. Infection prevention and control practices such as; hand hygiene (N=95), utilisation of personal protective equipment (N=150), injection practice (N=75) and sharp waste segregation at the site of work in the study health care facilities were focused for observational assessment.

4.6 Data Quality Control

The questionnaire was developed in English and translated into the local language of Amharic then back to English in order to look for clarity and consistency of the questions.

In order to check clarity, understand ability and completeness of the questionnaire pre-test was given for 15 health professionals (5% of the sample size) in Debarq primary hospital, not included in the study, and corrections were made accordingly before used for the final data collection.

Data collectors and supervisors (whose background was nurse) were recruited and training were given for two consecutive days before data collection. During the actual data collection, trained supervisors were scrutinizing the collected data on daily bases. At the end of each data collection day the principal investigator checked for the completeness of filled questionnaires and whether recorded information makes sense.

The collected data was reviewed, checked, coded, entered and cleaned for completeness and relevance of the data by the supervisors and principal investigator each day before analysis. The distribution and the internal consistencies of the responses were checked. Incomplete responses were not included in the analysis.

Observational data were collected before self administered questioners were distributed by those data collectors and supervisors whose background was HPs to keep patients/customers privacy.

4.7 Operational Definition

Hand hygiene - A general term referring to any action of hand cleaning. Hand hygiene relates to the removal of visible soil and removal or killing of transient microorganisms from the hands. Hand hygiene may be accomplished using an alcohol-based hand rub or soap and running water (Guideline for Hand Hygiene in Health-care Settings. MMWR 2002). Hand hygiene in this study includes, hand washing with both plain or antiseptic-containing soap and water when hands are visibly soiled or contaminated, if not visibly soiled or contaminated, hand-rubbing with aqueous alcohol is comparable. Overall practice include five moment; before starting procedures, after procedures and contact with bodily fluids, after touching a patient, immediately after removing gloves and after touching a patient's surroundings should be practiced .

Health care workers - Those health workers, who do have contact with syringes, needles, other sharp materials, blood and body fluids by the virtue of their duties (South Africa National Health Act, 2003). In this study HCWs include doctors, nurses, laboratory personnel, midwives and emergency surgery officers.

Knowledge- Understanding and skills that one gains through education or experience. It also defines knowledge as the state of knowing about a particular fact or situation (Ekechukwu EF, 2009). In this study, knowledge refers to the awareness of basic concept of standard precautions:-

Very good knowledge- those who answered above 75% from knowledge questions about SP,

Good knowledge - those who answered 50 to 75% from knowledge questions on SP and

Poor knowledge - those who answered less than 50% from knowledge questions on SP.

Practice- Practice refers to the extent that health care workers implement recommended strategies of standard precautions. In this study, practice refers a performance or a way of doing standard precautions, which is carried out yes or no.

Standard precautions- A group of infection prevention practices that apply to all patients, regardless of suspected or confirmed infection status, in any setting in which healthcare is

delivered. It is based on the assumption that every person is infected or colonized with an organism that could be transmitted in the healthcare setting and thus health care workers need to apply infection control practices during the delivery of health care. The same definition /assumption applies in this study on Hand Hygiene, PPE, Safe injection and Sharp waste segregation.

Safe injection- One that doesn't cause harm to the recipient, does not expose the provider to any avoidable risk, and does not result in waste that is dangerous to other people.

Personal Protective Equipment- Refers to a variety of barriers used alone or in combination to protect mucous membrane airways, skin and clothing from contact with infectious agents. In this study PPE utilisation according to the level of anticipated contamination when handling patient care that are visibly soiled or may have been in contact with blood or body fluids (glove, gown, mask and eye protection and covered shoe).

4.8 Variables

4.8.1 Dependent Variables

- Perceived standard precaution Practices

4.8.2 Independent Variables

- Sex, Age, year of service, educational level, profession, training on infection prevention and control, availability of equipment/supplies, knowledge, hours worked/week

4.9 Data Analysis Method and Procedures

Before and during data processing the information was checked for completeness and consistency. For data processing, the data entered, categorized and coded. The data entry and analysis were performed using SPSS version 16.0. It was verified that all totals corresponded to total number of study units. There were special columns for no response or missing data to arrive at accurate total figures.

Univariate analysis were used for frequency distribution of key items. To evaluate the relationship of selected independent variables with dependent one bivariate logistic regressions analysis was made. Finally, independent variables found significant and with P-value <0.25 were entered to multivariate logistic regressions to control the effect of confounding. The statistical significance of the findings were checked using p value < 0.05 and 95% confidence interval. The data obtained from observation on hand hygiene, injection, sharp waste segregation and PPE utilization practice were used to determine proportion.

4.10 Ethical Consideration

The proposal was approved by the Ethical Review Committee of College of Public Health and Medical Science, Jimma University to determine whether the proposal is scientifically sound and ethically acceptable. Official letter was obtained from Ethical Review Board and Department of Health Economics, Management, and Policy of Jimma University and delivered to North Shoa Zone Governmental Hospitals. Permission was obtained from those hospitals. Informed verbal consent was obtained from each participant before the beginning of data collection.

The right of the respondents to withdraw from participation were respected. Identification of an informant were possible only through specific identification numbers. All information were carried out with absolute privacy.

4.11 Dissemination and Utilization of Results

The result of the study was submitted to Jimma University College of Health Sciences, Department of Health Economics, Management, and Policy. Then findings of the study will be presented during thesis defence. After approval by the department copies of the study findings will be provided to Amhara Regional Health Bureau and for each studied health facilities. In addition, the findings will be presented on cluster meeting of the studied hospitals. Finally, Attempts will be made to present the results on scientific conferences and to publish the results of the study on peer reviewed journals.

Chapter Five: Results

5.1 Socio Demographic Characteristics of Respondents

A total of 247 health professionals were participated in this study with 95% response rate. Seven of the participants were not completed the questioner and the rest six not responded at all. Among the total respondents, the proportions of males were 148 (59.9%). The age of respondents ranged from 20- 55 years with mean of 29.71 (± 6.56). The majority of the respondents were nurses 141(57.1%). Regarding their service years 147 (59.5%) had served for less than or equal to 5 years. More participants 142 (57.5%) had worked above 40 hours per week and 150(60.7) of participants were college diploma holder.(Table 1)

Table 1: Socio-demographic characteristics of health professionals in public hospitals, North Shoa, Amhara national regional state, Ethiopia, 2015. (N=247)

Variables	Frequency	Percent
Age		
➤ Less or equal to 30 years	179	72.5
➤ Greater than 30 years	68	27.5
Marital status		
➤ Single	117	47.4
➤ Married	126	51.0
➤ Divorced	4	1.6
Profession		
➤ Doctor	35	14.2
➤ Nurse	141	57.1
➤ Laboratory	33	13.4
➤ Midwife	28	11.3
➤ Emergency surgical officer	10	4.0
Years of Service		
➤ ≤5 years	147	59.5
➤ 6-10 years	62	25.1
➤ 11-15 years	17	6.9
➤ >15 years	21	8.5
Hours worked per week		
➤ Less than 40 hours	26	10.5
➤ 40 hours	78	31.6
➤ Above 40 hours	143	57.9
Education level		
➤ Diploma	150	60.7
➤ Degree and above	97	39.3

5.2 Guideline and norms

The majority of the participants 198 (80.2%) were not vaccinated for hepatitis B virus. The reason for unvaccinated were, 162(65.6%) respondents response were unavailable of vaccine of HBV in the facilities.

In regard with the facilities having a guideline for infection prevention and control, more of the respondents 243 (98.4%) were aware, of those 171(70.4%) respondents were familiar with the guidelines covering infection prevention and control. Moreover, 114(46.2%) participants have participated in any training program about infection prevention or standard precaution in the last one year. (Table 2)

Table 2: Responses of health professionals on guideline and norms in public hospitals, North Shoa , Amhara national regional state, Ethiopia, 2015. (N=247)

Characters		Frequency	Percent
Vaccinated	Yes	49	19.8
	No	198	80.2
Reasons for unvaccinated (N=198)	Not aware	10	5.1
	Not available	162	81.8
	High cost	20	10.1
	Others	6	3
Awareness having IPC guideline in the facility	Yes	243	98.4
	No	4	1.6
Familiar with the guidelines covering IPC	Yes	171	70.4
	No	72	29.6
IPC training within the last one year	Yes	114	46.2
	No	133	53.8

In addition, the studied health facilities related to infection prevention practices were observed. The result showed that all health facilities had infection prevention and control guideline, IPC focal person and IP committee having members included from each department and had averagely once per two month meeting time. No documented feedback of IPC practice was seen in each department. The studied facilities also have incinerator.

There was no log sheet/book to record events of needle sticks/ sharps injuries, and other employee exposures in those studied health facilities except laboratory rooms.

5.3 General Knowledge of Respondents on Standard Precaution

The majority of respondents 244 (98.8%) said as they knew about the term standard precaution, but on the concept, that standard precaution include, the participants answered maximum scores 229(92.7%) on personal protective equipment utilisation and minimum scores were 136 (55.1%) on linen handling and segregation management. On the other hand in terms of potential ways of occupational exposure, respondents' response rate were ranged from 226(91.5%) needle stick /sharp injury to 82 (33.2) touching patients without PPE. (Table 3)

Moreover, the proportion of respondents who properly remained where standard precautions in practice, were 91.9% averagely. (Table 4)

In the concept of standard precaution 132 (54.1 %) respondents had very good knowledge, 75 (30.7%) good knowledge and 37 (15.2%) had poor knowledge in the study health care facilities. This implies 85.4% respondents were knowledgeable.

Table 3: Knowledge of respondents about standard precautions in public hospitals, North Shoa, Amhara national regional state, Ethiopia, 2015. (244)

Character		Frequency	Percent
The Concept of Standard Precaution Includes			
Hand Hygiene	Yes	226	91.5
	No	18	7.3
Personal Protective Equipment	Yes	229	92.7
	No	14	5.7
Sharps Management	Yes	219	88.7
	No	25	10.1
Management of Needle sticks Injury	Yes	170	68.8
	No	74	30.0
Linen Handling and segregation	Yes	136	55.1
	No	108	43.7
Blood and bodily fluid Spillage management	Yes	162	65.6
	No	82	33.2
Decontamination of Equipment and environment	Yes	146	59.1
	No	98	39.7
safe injection	Yes	196	79.4
	No	48	19.4
Potential Ways of Occupational Exposure			
Needle stick /sharp injury	Yes	226	91.5
	No	21	8.5
Splash on the eye and mouth (mucocutaneous)	Yes	182	73.7
	No	65	26.3
Inhalation	Yes	115	46.6
	No	132	53.4
Touching patients without PPE	Yes	82	33.2
	No	165	66.8

Table 4: Knowledge of respondents in which standard precautions needed and at risk of infection from health facility waste in public hospitals, North Shoa, Amhara national regional state, Ethiopia, 2015. (N=244)

Characters	Frequency	Percent
Respondents follow standard precautions		
HIV/AIDS patients only	7	2.8
Hepatitis B virus infection only	9	3.6
Signs/symptoms of infection only	2	0.8
For all patients	226	91.5
Body fluids require standard precautions		
Blood only	2	0.8
Vaginal fluid only	2	0.8
Blood tinged body fluids only	2	0.8
All body fluids	238	96.4
At risk of infection from your health facility waste		
Health care workers only	12	4.9
Supportive staff only	3	1.2
The client/patient only	3	1.2
The community	4	1.6
Visitors	2	.8
Patients` attendants	1	.4
All of the above	217	87.9
Others	2	2.0

5.4 Infection Prevention and Control Practices to Standard Precaution

5.4.1 Hand Hygiene Practices

Among two hundred forty seven HCWs, the majority of health professionals 241 (97.6 %) were practicing hand hygiene practices after completing the procedure and contact with bodily fluids, and 125(50.6 %) were washing their hand before starting the procedure. (Table 5)

The overall hand hygiene practice was 31.6% (n=78). The major reason for poor hand hygiene practice was, it increases patient waiting time 110 (65%). (Figure 2)

Table 5: Hand hygiene practices of health professionals in public hospitals, North Shoa, Amhara national regional state, Ethiopia, 2015. (N=247)

Hand Hygiene Practices		Frequency	Percent
Before starting the procedure	Yes	125	50.6
	No	122	49.4
After completing the procedure and contact with bodily fluids	Yes	241	97.6
	No	6	2.4
After touching a patient without glove	Yes	187	75.7
	No	60	24.3
Immediately after removing gloves	Yes	205	83.0
	No	42	17.0
After touching a patient's surroundings without glove	Yes	153	61.9
	No	94	38.1

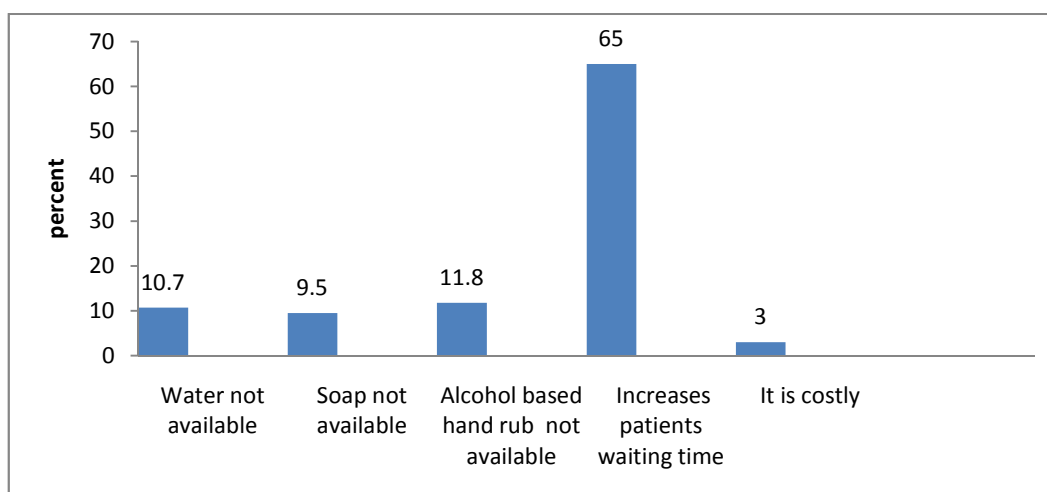


Figure 2: Reasons for poor hand hygiene practices of health professionals in public hospitals, North Shoa, Amhara national regional state, Ethiopia, 2015. (N=169)

5.4.1.1 Factors Affecting Hand Hygiene Practices of Respondents

To identify hand hygiene practice predictors, both bivariate and multivariate analysis was done on different selected variables. Those Doctors and laboratory personals were about three times more likely to practice hand hygiene before starting the procedure than nurses. [AOR= 2.594(1.109,6.06)& 2.999(1.221,7.36) respectively].

Emergency surgical officers were six times more likely to practice hand hygiene before starting the procedure than nurses. [AOR=6.144(1.143,33.03)].

Odds of HH practice after touching patient's surrounding without glove was likely to be reduced by 62.5% among midwives compared to nurses. [AOR=0.375(0.164,0.85)].

Moreover, trained HPs were two times more likely to practice all hand hygiene moments than untrained HCWs. [AOR=2.068(1.165,3.673)]. (Table 6)

Table 6: Bivariate and multivariate analysis of factors affecting hand hygiene practices among HPs in public hospitals, north Shoa, Amhara national regional state, Ethiopia, 2015. (N=247)

Character		HH Before starting the procedure		COR(95% CI)	PV	AOR(95% CI)
		Yes n (%)	No n (%)			
Profession	Doctor	22(62.9%)	13(37.1%)	1.979(0.924,4.237)	0.028	2.594(1.109,6.06)
	Nurse	65(46.1%)	76(53.9%)			1
	Laboratory	22(66.7%)	11(33.3%)	2.338(1.055,5.183)	0.017	2.999(1.221,7.36)
	Midwife	8(28.6%)	20(71.4%)	0.468(0.193,1.132)	0.256	0.578(0.224,1.48)
	Emergency surgical officer	8(80.0%)	2(20.0%)	4.677(0.959,22.80)	0.034	6.144(1.143,33.03)
Hours worked/ week	<40 hours	7(26.9%)	19(73.1%)	0.302(0.120,0.764)	0.004	0.211(0.074,0.606)
	= 40 hours	40(51.3%)	38(48.7%)	0.864(0.497,1.502)	0.690	0.873(0.447,1.703)
	>40 hours	78(54.9%)	64(45.1%)			1
Training	Yes	69(60.5%)	45(39.5%)	2.108(1.267,3.509)	0.017	1.986(1.130,3.492)
	No	56(42.1%)	77(57.9%)			1
Age	≤30 years	86(48.0%)	93(52.0%)			1
	>30 years	39(57.4%)	29(42.6%)	1.454(0.828,2.554)	0.028	2.186 (1.087,4.396)
HH After touching patient's surrounding without gloves						
Profession	Doctor	17(48.6%)	18(51.4%)	0.472(0.223,0.99)	0.050	0.472(0.223,0.999)
	Nurse	94(66.7%)	47(33.3%)			1
	Laboratory	25(75.8%)	8(24.2%)	1.562(0.655,3.72)	0.315	1.562(0.655,3.72)
	Midwife	12(42.9%)	16(57.1%)	0.375(0.164,0.85)	0.020	0.375(0.164,0.85)
	Emergency surgical officer	5(50.0%)	5(50.0%)	0.500(0.138,1.81)	0.292	0.500(0.138,1.81)
Overall hand hygiene practices (five moments)						
Sex	Male	40(27.0%)	108(73.0%)			1
	Female	38(38.4%)	61(61.6%)	1.682(0.976,2.897)	0.115	1.618(0.889,2.943)
Training	Yes	47(41.2%)	67(58.8%)	2.308(1.334,3.994)	0.013	2.068(1.165,3.673)
	No	31(23.3%)	102(76.7%)			1

Among one hundred twenty observed working rooms, 110(91.7%) had water sources having 90 (81.8%) soap. Health professionals were using water, soap and alcohol based hand rub for their hand hygiene practices. Of 95 observed hand hygiene practices, the highest rate 89 (93.7%) were observed after completing their procedures and after glove removal were 76 (80%). On the other hand, least practices were observed before starting the procedures 20 (21.1%). The good thing in our observation is that almost all HPs had alcohol based hand rub in their pocket.

5.4.2 Personal Protective Equipment Practices

As shown in Table 7, two hundred forty four 244 (98.8%) and 238(96.4%) of the respondents were utilising gloves and gown respectively for any patient in working place. Two hundred eighteen (88.3%) respondents were utilising mask /eye protection for procedures likely to generate droplets/splash and only 145(58.7%) participants wear covered shoe in their working place. The overall personal protective equipment utilisation of health professionals in this study was 137(55.5%). The reason for not utilising of personal protective equipments like mask/goggle and covered shoe was due to shortage of supply (79.4%). (Figure 3)

Table 7: Personal protective equipment utilization of health professionals in public hospitals, North Shoa, Amhara national regional state, Ethiopia, 2015. (N=247)

personal protective equipment Utilization		Frequency	Percent
Gloves use for any patient	Yes	244	98.8
	No	3	1.2
gown/plastic apron wear in working place	Yes	238	96.4
	No	9	3.6
mask and eye protection use for procedure likely to generate droplets/splash	Yes	218	88.3
	No	29	11.7
wear Boots/ covered shoe in working environment.	Yes	145	58.7
	No	102	41.3

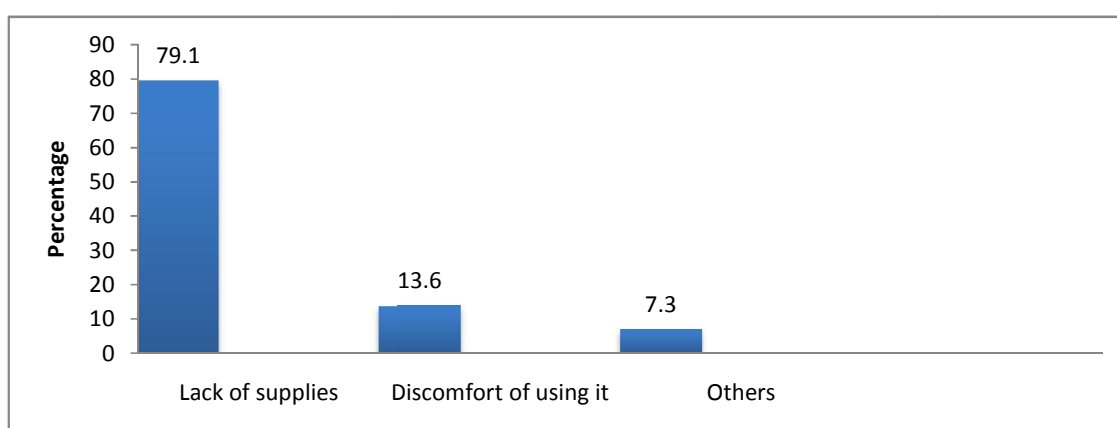


Figure 3: Reasons for not utilizing PPE of health professionals in public hospitals, North Shoa, Amhara national regional state, Ethiopia, 2015. (N=110)

5.4.2.1 Factors Affecting Personal Protective Equipment Utilisation of Health professionals

To identify personal protective equipment utilisation predictors both bivariate and multivariate analysis were done on different selected variables. Those HPs who serve more than ten years were almost seven times more likely to practice wearing covered shoes than those who serve less than five years. Furthermore, trained HPs were about two times more likely to utilise all PPE than untrained HCWs. [AOR= 6.824(1.392,33.449) & 2.294(1.342,3.923) respectively]. However, the odd of utilising covered shoes was likely to be reduced by 45% among female HCWs compared to male HPs. [AOR= 0.550(0.316,0.959)]. (Table 8)

Table 8: Bivariate and multivariate analysis of factors affecting PPE utilization of HPs in public hospitals, north Shoa, Amhara national regional state, Ethiopia, 2015. (N=247)

Character		wear Boots/ covered shoe		COR(95% CI)	PV	AOR(95% CI)
		Yes n(%)	No n (%)			
Sex	Male	88(59.5%)	60(40.5%)			1
	Female	49(49.5%)	50(50.5%)	0.668(0.400,1.116)	0.035	0.550(0.316,0.959)
Profession	Doctor	15(42.9%)	20(57.1%)	0.524(0.248,1.108)	0.999	0.000(0.000,.)
	Nurse	83(58.9%)	58(41.1%)			1
	Laboratory	23(69.7%)	10(30.3%)	1.607(0.712,3.630)	0.278	1.630(0.674,3.939)
	Midwife	17(60.7%)	11(39.3%)	1.080(0.471,2.475)	0.584	1.285(0.524,3.151)
	Emergency surgical officer	7(70%)	3(30%)	1.631(0.405,6.569)	0.999	0.000(0.000,.)
Year of service	≤5 years	81(55.1%)	66(44.9%)			1
	6-10 years	33(53.2%)	29(46.8%)	0.927(0.511,1.682)	0.828	0.927(0.467,1.838)
	11-15 years	14(82.4%)	3(17.6%)	3.802(1.048,13.794)	0.018	6.824(1.392,33.449)
	>15 years	17(81.0%)	4(19.0%)	3.463(1.111,10.792)	0.011	6.620(1.534,28.559)
Training	Yes	78(68.4%)	36(31.6%)	2.134(1.268,3.594)	0.016	1.998(1.140,3.504)
	No	67(50.4%)	66(49.6%)			1
Utilization of personal protective equipment						
Year of service	≤5 years	77(52.4%)	70(47.6%)			1
	6-10 years	31(50.0%)	31(50.0%)	0.909(0.502,1.646)	0.864	0.947(0.507,1.767)
	11-15 years	14(82.4%)	3(17.6%)	4.242(1.170,15.385)	0.029	4.329(1.157,16.189)
	>15 years	15(71.4%)	6(28.6%)	2.273(0.836,6.181)	0.082	2.499(0.890,7.013)
Training	Yes	75(65.8%)	39(34.2%)	.202(1.315, 3.688)	0.002	2.294(1.342,3.923)
	No	62(46.6%)	71(53.4%)			1

Based on our observational findings of PPE utilisation all (n=150) health professionals wore gown in their working place and the majority of 135(90 %) health care workers used glove in their work, furthermore, from observed health professionals utilisation of mask 35(24.7%), eye protection 21(14%), and covered shoes 127(84.7%) HPs were utilizing.

5.4.3 Safe Injection and Sharp Waste Segregation Practice

Among 247 HPs, one hundred ninety seven (79.8%) of the respondents were reported that they never recap used needles, 29(11.7%) recap used needles and 13(5.3%) participants were bend used needles by hand. Consequently, 31 (12.6%) HPs have faced to needle stick/sharp injury in the last one year.

Sudden movement of the patient during injection or drawing blood from patient 12(38.7%) was main reason of the accident followed by recap of used needles 8(25.8%) and during sharp collection at the site of work 8(25.8%).

Regarding sharp segregation practices at the site of work, almost all respondents 241(97.6%) used safety box. (Table 9), (Figure 4)

Table 9: Health professionals response on injection and sharp segregation practices in public hospitals, North Shoa, Amhara national regional state, Ethiopia, 2015. (N=247)

Practices	Frequency	Percent
Safe Injection Practices		
• Bend needles by hand to prevent injury to other health worker	13	5.3
• Recap used needles	29	11.7
• Don't recap used needles	197	79.8
• Others	8	3.2
Sharp Collection and Disposal Materials		
• Safety box/card box	241	97.6
• Plastic pail with lid	4	1.6
• Plastic pail without lid	1	.4
• Others	1	.4

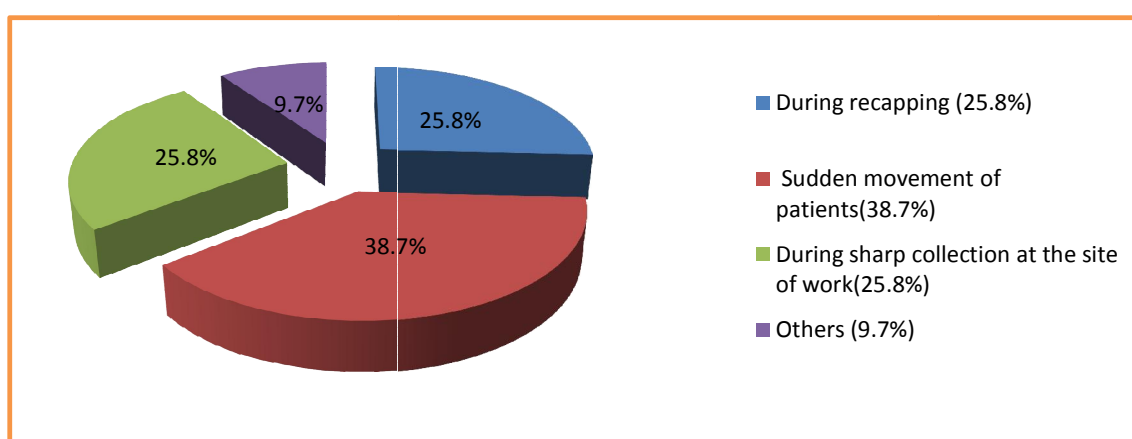


Figure 4: Health professionals reasons for exposed to needle stick/ sharp injury in public hospitals, North Shoa, Amhara national regional state, Ethiopia, 2015. (N=31)

The result of our observation also showed that all injection provided (n=75) were used new needle and syringes from pack. Twelve (16%) participants were practicing recapping of needles after injection. Our observation also showed that 67(89.3%) used needles and syringes were collected in to safety box. Four (5.3%) recapped needles were left on injection preparation tables and others were left on bedside of medical wards. The majority (95%, n=120) observed working rooms had labelled waste collection materials including safety box in nearby working site.

Chapter Six: Discussion

Employing standard precautions means taking precautions with everybody. If precautions are taken with everyone, health care workers do not have to make assumptions about people's lifestyle and risk of infection. Yet, different study showed that practices of standard precaution within health facilities were low (21, 23). In this study three fourth (84.8%) participants were knowledgeable regarding concept of standard precaution. This finding is similar outcome with a recent study done in Bahir dar city administration health facilities (84.2%) (36), but dissimilar than the study finding in North Wollo health facilities (44.4%) (23) and a study finding in Ghana, Ridge hospital (51%) (27). This difference might be due to infection prevention training has been given for HPs now than the previous time.

Hand hygiene is the single most important means of preventing the spread of infection and it is one of the components of standard precautions (10, 31). This study assessed HPs hand hygiene practice and found out 97.6 % health professionals were practicing hand hygiene after completing the procedure and contact with bodily fluids. This finding is supported by our observational outcome 93.7% of participant were hand hygiene practice after completing the procedure. About half (50.6%) HPs were hand hygiene practices before starting any procedure. This finding is comparable to the study done in Bahir dar city administration health institutions (50.8%) (36) but different outcome than study finding in North Wollo health facilities (27.5%) (23). This might be due to better opportunity to training than the previous time and starting of Clean and Safe Health facilities program in our studied facilities. The overall hand hygiene practice in this study were 31.6%. But the overall hand hygiene practice score in the study finding done in Bahir dar city administration were 69.0% (36). This discrepancy might be due to the component of hand hygiene practices enrolled, that in this study five moments were included but only two (before the procedure and after the procedure) were included in study finding of Bahir dar city administration.

Worldwide, the average overall hand hygiene practice in different HCWs and health-care facilities were 38.7% (32) and a study done in University of Geneva Hospital in Switzerland revealed hand hygiene practice rate ranging from 23% -87% in different health care workers (33). This disparity might be due to socio-economic and training difference of those study facilities.

Proper use of Personal protective equipment (PPE) is important for protecting staff and customers from infectious diseases (33, 35). In this study, the majority of respondents utilized glove and gown for any patients in working place(98.8% and 96.4%) respectively, this also confirmed by observational findings were all observed participants worn gown and 90% of used glove. And 88.3% of participants were reported utilizing mask and eye protection for procedure

likely to generate droplets/splash and only 58.7% worn covered shoe in working place. This finding is differ than a study done Mekelle special zone health facilities that, only 10.5% HCWs used goggles and/or mask for procedure likely to generate droplets/splash (21) and a study finding in North Wollo that, 30.7% respondents were worn boots or shoes,16.9%) eye protectors and 69.9% mask (23). This variation might be due to starting of Clean and Safe Health facilities (CASH) program. The overall utilization of PPE in this finding was 55.5%. This finding is varied from a study finding done in Bahir dar city administration health facilities, that the overall utilization of PPE was 35.6% (36). This difference might be due to it include caps but in our study, this caps are not common PPE for all HPs.

Regarding the respondents injection practice, this study found out 79.8% avoid recap needle after injection, 17% were not good practices (11.7% were recap and 5.3% were bend used needles) it also supported by observation findings, among seventy five participants we observe 16% (n=12) were recap used needles. This finding is similar that findings of a study done Mekelle special zone health facilities that, 82.4% not recap used needles, 17.0% recap used needles (21) and a study finding in Nigeria, Irrua hospital 85.5% were not recap used needles, 14.5% recap used needles (43). But different finding than the study finding in Bahir dar city administration, that 26.8% recap needle after injection (36). This might be due to the high priority is give for infection prevention and control in CASH program.

In this study, 12.6% of HPs had exposed to needle stick or sharp injury in the last one year. This is different finding than the study finding in Bahir dar city administration (19.5%) (36), Mekelle special zone (22.2%) (21) and North Wollo (16%) (23) respondents were exposed to needle stick or sharp injury in one year. This improvement might be due to better emphasis is given for IPC from time to time, especially in CASH program.

Unsafe sharp waste collection causes between 5%-28% of needle stick injuries (40). Concerning sharp collection and segregation practices, This study found out almost all(97.6%) respondents were used safety box for needle/ sharp collection after used at work site. Similarly this finding is also better than the related study findings done in Ethiopia showed that, North Wollo (90.0%) (23), Mekelle special zone (79.5%) (21), Bahir dar city administration (53.7%)(36) and South India at tertiary care hospitals (87.6%) (42) of the respondents discarded used needles and other sharps in a safety box. The possible justification could be due to enhanced emphasis is given for IPC and better supply of IPC material from time to time .

Besides, HBV infection is a major infectious hazard for health care worker CDC (2001) recommends that any person who performs a task that involves having contact with blood, blood contaminated with body fluid, or sharps should receive vaccination against HBV (44).

But in our study found out only one fourth (19.8%)HPs were vaccinated for hepatitis B virus. This finding is different from a study finding done in Nigeria, Abuja public health facility that, 70.1% respondents were vaccinated(44). This difference might be socio-economic difference of those participants because 65.6% of the respondents in this study reasoned out the unavailability of HBV vaccine in the study facilities.

6.1 Limitation of the Study

Recall bias of the respondent because unable to remember of injuries which occur in the previous 12 months and sensitivity of the issue.

Social desirability and Hawthorn effect (special and stressful attention of respondents to the observation and the questionnaire of the knowledge and practice) bias of health professionals, this limits generalization of study findings.

Chapter Seven: Conclusion and Recommendation

7.1 Conclusion

Even though HPs had better IPC practices there was low practices on overall hand hygiene practice and utilization of personal protective equipment in the study health care facilities. This increase the probability of getting risk from hospital acquiring infections. In addition, better injection and sharp disposal practices were reported but still unsafe practice was there. Overall trained health professionals' had a good knowledge and practice towards standard precaution.

Observational findings indicates that even though the studied facilities having good infrastructure for performing infection prevention and control practises, HPs in those facilities perform lack regulate practices especially on hand hygiene practice and PPE utilization. The average meeting time of IPC committee of the facilities were once per two month. Furthermore, there was no documented feedback of IPC practice in each department. This make IPC practice goes downwards.

7.2 Recommendation

The studied health institutions take in to consideration that training in IPC should be part of routine work process for all HPs at the facility. This would improve the practices of standard precaution which leads to deliver quality care to health providers and customers.

The hospital management should ensure the availability of infection prevention and control materials for HPs to use for their work.

The IPC committee of the studied hospitals should actively functional for supportive supervision and monitoring actives to ensure practices of standard precaution and provide feedback to health professionals.

Health professionals should receive vaccination against HBV, so the studied institution and all HPs should be thinking on this issues.

The infection prevention and control focal persons should prepare and distribute log sheet/book to record events of needle sticks/ sharps injuries, and other employee exposures to each department.

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Annex

Annex I: Questionnaire

Health care workers' self-reporting questionnaire to be filled by governmental hospitals health workers from North Shoa.

October, 2014

Dear Health professionals,

In developing countries Healthcare-associated infections (HCAIs) have been reported to be a serious problem in the healthcare services as they are common causes of illness and mortality among hospitalized patients including Health Care Workers (HCWs). Prevention is the first best option of all. In line with this a study was proposed to predict hospital health care workers' knowledge and practices to compliance standard precaution in hospitals that can be used to design an appropriate intervention. You are chosen to participate in this study.

In order to effectively attain the goal your responses are important information which will enable us to examine knowledge and practice of HPs and many factors which are involved in practices of standard precaution.

We are asking you for your help. Here is a questionnaire for you to complete. There is no need to put your name on the questionnaire; no individual responses will be reported. It is your full right to refuse any or all of the questions. Please read each question carefully and answer it to the best of your ability. There are no correct or incorrect responses; we are merely interested in your personal point of view.

Do you want to participate in the study?

1. Yes, I want to participate in the study

Signature _____ Date _____

2. No, I don't want to participate in the study.

THANK YOU VERY MUCH!

Date of completion _____

Name of your Hospital _____

District/ city the hospital is located _____

SELF-REPORTED QUESTIONER

Please

• Write the number of years in response to questions 1.2., 1.6 and 1.7.

• Encircle the number codes that corresponds to your chosen options

Q/No	ITEM/QUESTION	RESPONSE OPTION	CODE	SKIP TO
Part one:- General Information				
101	Sex:	Male Female	1 2	
102	Age:	() year		
103	Marital status:	single married Divorced Widowed	1 2 3 4	
104	Profession:	Doctor Nurse Laboratory Midwife	1 2 3 4	
105	Years of Service:	() year		
106	Hours worked per week:	less than 40 hours 40 hours Above 40 hours. Other specify _____	1 2 3 99	
107	Education level:	-10+3 -12+1 + 12+2 -12+4 -12+6 -Other specify _____	1 2 3 4 99	
Part two:-Guideline, norms and practices				
201	Are you Vaccinated for Hepatitis B virus?	Yes No	1 2	
202	Give reasons if your response to Q 201 is 2	Not aware Not available in the facility High cost Other specify _____	1 2 3 99	
203	Does the facility have a guideline for infection prevention and control?	Yes No	1 2	205
204	Are you familiar with the guidelines covering infection control?	Yes No	1 2	
205	Have you ever participated in any training program about infection prevention or universal precaution in the last one year?	Yes No	1 2	
Part three:- General Knowledge On Infection Prevention And Controls				
301	Have you heard about standard precaution or universal precaution?	Yes No	1 2	306

302	If yes to Q 301, the concept of standard precaution includes:-	-Hand Hygiene -Personal Protective Equipment (PPE) -Sharps Management -Management of Needle stick Injury -Linen Handling and segregation - Blood and bodily fluid Spillage management - Decontamination of Equipment and environment -safe injection -others specify _____	1 2 3 4 5 6 7 8 99	
303	For which of these conditions you follow standard precautions?	-HIV/AIDS -Hepatitis B virus infection -Signs and symptoms of infection	1 2 3	
304	What are potential ways of occupational exposure?	-Needle stick /sharp injury - Splash on the eye -Inhalation -Talking to patients -Touching patients	1 2 3 4 5	
305	Which of the following body fluids require standard precautions?	Blood Vaginal fluid Blood tinged body fluids	1 2 3	
306	In the absence of standard precaution health care facilities can be the source of infection and epidemic diseases?	Strongly agree Agree Don't know Disagree Strongly disagree	1 2 3 4 5	
307	Who could be at risk of infection from your health facility waste?	- Health Professionals/ workers -Supportive staff -The client / patient - The community -Other specify _____	1 2 3 4 99	
Part four:- Hand Hygiene				
401	According to the standards precautions, hand washing is performed	-Before any direct contact with patients - Between patients' contact -Immediately after removing gloves -After touching body fluids such as blood, excretions and sweat Before and after procedures Other (specify) _____	1 2 3 4 5 99	
402	Do you clean your hand at work?	Yes No	1 2	
403	Which method do you use to	Soap and water	1	

	clean your hands at work?	Alcohol based hand rub Other specify_____	2 99	
404	When do you use alcohol based hand rub to clean your hand?	Not visibly contaminated Visibly contaminated Other specify_____	1 2 99	
405	When do you clean your hands?			
406	Before starting the procedure	Yes No	1 2	
407	After completing the procedure and contact with bodily fluids	Yes No	1 2	
408	After touching a patient	Yes No	1 2	
409	Immediately after removing gloves	Yes No	1 2	
410	After touching a patient's surroundings	Yes No	1 2	
411	I clean my hands with soap and water/ alcohol based hand rub after any direct contact with patients.	always often seldom never	1 2 3 4	
412	Give reasons if your response to Q 411 is 2, 3 or 4	-Water and soap alcohol based hand rub / not available -It is a waste of time and it increases patient waiting time - Not all patient contact is infectious -It is costly -Other (specify)_____	1 2 3 4 99	
Part five:- Personal Protective Equipment				
501	Do you use personal protective equipment	Yes No	1 2	503
502	If Yes to Q501, which one?	Apron Utility glove/ double glove Head cover Boots/ covered shoe Eye protectors / goggle Mask Examination glove Gown Other specify_____	1 2 3 4 5 6 7 8 99	
503	If your answer is No to Q 501, Why?	Difficult to work with Not always necessary Uncomfortable Out of stock/not available Other specify_____	1 2 3 4 99	
504	Glove use for all patient care contacts is a useful strategy for reducing risk of	Strongly agree Agree Don't know	1 2 3	

	transmission of organism.	Disagree Strongly disagree	4 5	
505	When do you use gloves?	For all people when needed For only HIV Suspected cases For only HIV Positive cases For procedures which needs glove Other specify_____	1 2 3 4 99	
506	I wear gloves for contact with body fluids, non-intact skin and mucous membrane	always often seldom never	1 2 3 4	508
507	Give reasons if your response to Q 506, is 2,3 or 4	Lack of supplies Discomfort with use of gloves Might cause fear in patients Other (specify)_____	1 2 3 99	
508	I wear gown/plastic apron during procedures likely to generate splashes of blood or body fluid	always often seldom never	1 2 3 4	510
509	Give reasons if your response to 508, is 2, 3 or 4	Lack of supplies Discomfort with use of it Might cause fear in patients Other (specify)_____	1 2 3 99	
510	I wear a mask and eye protection for procedure likely to generate droplets/splash of blood or body fluid	always often seldom never	1 2 3 4	512
511	Give reasons if your response to 510 is 2, 3 or 4	Lack of supplies Discomfort with use it Might cause fear in patients Other (specify)_____	1 2 3 99	
512	I cover all cuts and abrasions with a water proof dressing	always often seldom never	1 2 3 4	514
513	Give reasons if your response to 512, is 2, 3 or 4	Lack of supplies Discomfort with use it Might cause fear in patients Other (specify)_____	1 2 3 99	
514	I wear Boots/ covered shoe in my working environment.	always often seldom never	1 2 3 4	516
515	Give reasons if your response to 514, is 2, 3 or 4	Lack of supplies Discomfort with use it Might cause fear in patients Other (specify)_____	1 2 3 99	
516	In your health facility	Using laundry machine	1	

	soiled linen is washed by__	Using hand Other specify	2 99	
517	Give reasons if your response to 514, is 2, 3	No laundry machine None functional of it	1 2	
Part six:- Safe Injection				
601	What do you think the main reasons for reuse of syringe and needles?	no reuse of syringe & needle Shortage of supply Lack of knowledge Carelessness To reduce the cost of treatment Other specify_____	1 2 3 4 5 99	
602	After giving injections or drawing blood from the patients,	I do not recap used needles I remove needles from the disposal syringes I bend needles by hand to prevent injury to other health workers I recap used needles Other specify_____	1 2 3 4 99	
603	When I discard used needles and sharps, I use	any available container a dust bin covered with plastic a closed dust bin a puncture proof container/ safety box	1 2 3 4	
604	Have you had needle stick or sharp injury in the last one year?	Yes No Don't Know	1 2 3	
605	If yes how did you sustain the injury?	-During recapping -By sudden movement of the patient -During sharp collection -Other specify_____	1 2 3 99	
606	Is there any prophylaxis to HIV after exposed to injury by needle/ sharp?	Yes No Don't Know	1 2 3	
607	Do you take post exposure prophylaxis (PEP) after injury?	Yes No	1 2	
608	Is there responsible person for conducting incidence activities in your facility?	yes no don't know	1 2 3	
Part seven:-Safe Sharp Waste Management				
701	Where do you dispose sharp materials or used needles?	-Open pail -In sharp and liquid proof container without disassembling -In sharp and liquid proof container after disassembling -Mixed with other wastes/ rubbish -Other specify_____	1 2 3 4 99	

702	Are there any sharp /needle collection box?	Yes No Not available	1 2 3	
703	If yes type of sharp collection material	Safety box/ card box/ Plastic pail with lid Plastic pail without lid Other specify _____	1 2 3 99	
704	What goes in to the safety box?	-Disposable syringe with needles -Lancets -Other contaminated sharps -Empty vials - Cotton pads -Dressing materials -bags or extension tubes -Latex glove -Other materials or waste products _____	1 2 3 4 5 6 7 8 99	

Part eight:- Facility Observation Checklist :-Circle your chose from Q701-Q708 and enter your chose code number in each department from Q709-end.

Q/No	ITEM/QUESTION	RESPONSE OPTION	CODE	SKIP TO	Emergency	Out patient	Laboratory	Ward	Delivery	MCH	Remark
801	Is there a responsible person for conducting infection control activities in your facility?	yes no	1 2								
802	Is there a formal Infection Control Committee in the facility?	Yes No	1 2								
803	Does the committee include at least one physician, one nurse, and one other person with training in infection control?	yes no	1 2								
804	How many times did the committee meet during the past 12 months? (Mark one answer)	Twelve Six Four Three Two Other _____	1 2 3 4 5 99								
805	Which of these general topics are discussed at these meetings? (Mark all that apply)	- Infection rates (surveillance results) -Specific hospital infection cases -Outbreaks of hospital infections -Sterilization/ disinfection procedures - Education and training programs in infection control	1 2 3 4 5 99								

		- other									
806	Is there an orientation program with information on infection control for health care workers facility?	Yes No	1 2								
807	Does the facility have a guideline for infection prevention and control?	Yes No	1 2								
808	Is there water source in the health facility?	Yes No	1 2								
809	What is the source of the water?	-Tap water -Protected spring water - Protected well water - Stream - Other specify _	1 2 3 4 99								
810	During your observation is there running water in there room?	Yes No	1 2								
811	Is there soap available at the station?	Yes No	1 2								
812	Are paper towels available to dry hands?	Yes No	1 2								
813	Is there alcohol swab in the room?	-Yes -No -Not available	1 2 3								
814	Is there alcohol-based hand rub in the room?	-Yes -No -Not available	1 2 3								
815	At the time of observation does the health care provider wear personal protective equipment/PPE?	-Yes - No - Not available	1 2 3								

816	If yes which one of the PPE was witnessed?	- Apron - Utility glove (double glove) - Head cover -Boots/shoe -Eye protectors/ Goggle - Mask - Gown -Other	1 2 3 4 5 6 7 99								
817	How was the condition of the safety box or sharp container in the health facility?	-Over filled -Torn and needles seen through the hole -Empty or few dirty -syringed and needles - Sharps mixed with other waste -Other()	1 2 3 4 5 99								
818	Is here a written material or picture for risk communication in the department/ working room?	Yes No	1 2								
819	How are syringes and needles and sharps disposed in the health facility?	- open incineration -Protected incineration - Open dumping - Burial in the pit - Dumping - Other	1 2 3 4 5 99								
820	Are there contaminated needles, syringe or other sharps in the surrounding of the health institution?	Yes No	1 2								
821	What goes in to the safety box?	-Disposable syringe with needles	1								

		- Lancets -Other contaminated sharps -Empty vials -Cotton pad Dressing material - Latex glove -other plastic materials or waste products	2 3 4 5 6 7 99								
822	Where do you dispose sharp materials or used needles?	-Open pail -In sharp and liquid proof container without disassembling -In sharp and liquid proof container after disassembling -Mixed with other wastes/ rubbish -Other specify	1 2 3 4 99								
823	The facility maintains a log of needle sticks, sharps injuries, and other employee exposure events	Yes No	1 2								

Part nine:- observation of Hand hygiene practices in _____ unit
 facility code: _____ category of health worker observed _____
 day _____ month _____ year _____

	Hand hygiene practice observed	Please answer “Yes,” “No,” or “NA” (Not applicable / not observed) in the designated column. The goal is to observe four hand cleaning in each service unit that is included in the study. All observed in the same unit may be the same participant in different moment.			
	Observe HH in these moments	Participant 1	Participant 2	Participant 3	Participant 4
901	Did the provider clean his/her hands with soap and water or an alcohol-based hand sanitizer? Before any direct contact with patients				
902	Before starting the procedure				
903	After completing the procedure and contact with bodily fluids				
904	After touching a patient				
905	Immediately after removing gloves				
906	After touching a patient’s surroundings				
907					
908					

Part ten:- observation of injection administration in _____ unit
 facility code: _____ category of health worker observed _____
 day _____ month _____ year _____

	Injection practice observed	Please answer “Yes,” “No,” or “NA” (Not applicable / not observed) in the designated column. The goal is to observe four injections in each service unit that is included in the survey. All four injections may be of the same type.			
		Injection 1	Injection 2	Injection 3	Injection 4
1000	Instructions: Please label each injection observed as “V” (vaccination), “C” (curative), “D” (diagnostic) or “FP” (family planning / contraceptive).	Type:	Type:	Type:	Type:
	Was the injection preparation done on a clean, dedicated working table or tray where the contamination of the equipment with blood, dirty swabs or other biological waste is unlikely?				
1001	Did the injection provider wash his/her hands with soap and water before beginning the injection or where there was a risk of contact with soil, blood, or body fluids?				
1002	Did the injection provider clean his/her hands with an alcohol-based hand sanitizer before beginning the injection or where there was a risk of contact with soil, blood, or body fluids?				
1003	Did the injection provider wear appropriate PPE?				
1004	For each injection given, was the needle and syringe taken from a sterile pack?				
1005	For cases where the needle and syringe were NOT taken from a sterile pack: Was there evidence that a used needle and/or syringe was being reused on this patient?				
1006	Was the needle removed from the rubber cap of each multi-dose vial after withdrawing each dose for administration?				
1007	If a glass ampoule was used, did the provider use a clean barrier (e.g., sponge, cotton, gauze, or file) to protect his/her fingers when breaking the ampoule?				
1008	For each reconstitution, was a sterile syringe and needle taken from a sealed pack?				
1009	Was the patient’s skin cleaned with a clean swab or disinfectant before the injection was given?				
1010	After the completion of the injection, was the used syringe recapped?				
1011	After each injection observed, did the provider immediately dispose of the used needles and syringes in an appropriate sharps container or use a needle remover?				