

**Compliance with infection prevention practice and associated Factors
among health Professionals in public hospitals of Kembata Tembaro Zone,
South Ethiopia**

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Abstract

Background Infection in hospitals and other healthcare settings is a problem for health services around the world and main public health problem which causes major health risks that leads to morbidity, mortality and cost. The possibility of transmitting infections in health care setting is higher if essential infection prevention control practices are not accomplished. Despite a significant improvement in facility of health institutions and in the number and kind of health task forces in Ethiopia particularly in the last two decades, reports showed that there is still high burden of Hospital acquired infections on the other hand, except for some few studies on compliance very limited evidences are available with regard to the level of compliance of professionals with infection prevention practice and associated factors in the country in general and in the study area in particular.

Objective: To assess compliance with infection prevention practice among health professionals and associated factors in public hospitals in Kembata Tembaro Zone, SNNP Regional state.

Methods: Institution based cross-sectional study was conducted from march 10 -April 20/2019 in all public hospitals of Kembata Tembaro Zone, SNNP Regional state, a total of 399 health care professionals were taken from respective hospitals by proportional allocation to size of number of professional hospitals. The data collection procedure was employed using quantitative and qualitative method. In quantitative method interviewer administered structured questionnaire was used, whereas for qualitative part FGD guide was used. Data entry was made using the Epidata 3.1 software. Then the data were exported to SPSS statistical package version 20 for analysis. Bivariate logistic analysis was carried out to identify variables that are associated with compliance of health professionals towards infection prevention practice. Those variables in bivariate logistic analysis whose p value is less than 0.25 are included in multiple logistic regressions. Adjusted odds ratios (AOR) with corresponding 95% confidence interval (CI) were used to quantify the strength of association and p-value ≤ 0.05 was used to declare statistical significance. Ethical clearance was obtained from Jimma University Institute of Health Institutional Review Board

Result A total of 391 health professions were participated yielding the response rate of 97.9%. The findings showed that, among 391 health professions, 280(71.6%) respondents were knowledgeable on infection prevention and 57.8% are compliant towards infection prevention. The overall reported hand hygiene practice was 69.8%. Report on injection and sharp segregation practice shows that 346(88.5%) respondents were practicing safe injection and 306(78.6%) health professions were using safety box for sharp waste segregation. Sex, Marital status, profession, Knowledge on IP and Attending training programs on IP were found to be significantly associated with infection prevention practice at P-value <0.05 . From qualitative data, high professionals turnover, heavy patient load and perceived understaffing, frustration with follow up from hospitals, and negligence of health professionals were classified as barriers. Government commitments to hospitals infection prevention, frequency and decentralized trainings on infection prevention, staff knowledge about infection prevention, support from NGOs were facilitators for safe infection prevention practice.

Conclusion Compliance with IPP among the health professionals is low in sharp waste segregation and PPE utilization.

Recommendation the study finding suggests hospitals a need for improvement in the supply of materials for IP and Sharp Waste should be segregated and disposed per standard.

Key words: infection prevention, health professionals, compliance.

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List of abbreviation

AD	Auto Disposable (syringe)
AIDS	Acquired Immune Deficiency Syndrome
ARHB	Amhara Regional Health Bureau
CASH	Clean and Safe Health Facilities
CDC	Center for Disease Control and Prevention
HAPCO	HIV/AIDS Prevention and Control Organization
HAI	Hospital Acquired Infections
HBV	Hepatitis B Virus
HCAIs	Health Care-Associated Infections
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
IC	Infection control
IP	Infection Prevention
IPP	Infection Prevention Practice
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
UP	Universal Precautions
WHO	World Health Organization

Chapter One: Introduction

1.1. Background

According to WHO, Infection Prevention can be defined as actions practiced by health professionals in healthcare facilities to decrease transmission and acquisition of infectious agents. Infection control measures are based on how an infectious agent is transmitted and include standard, contact, droplet, and airborne precautions. Transmission of infections in health care facilities can be prevented and controlled through the application of basic infection control precautions which can be grouped into standard precautions, which must be applied to all patients at all times, regardless of diagnosis or infectious status, and additional (transmission-based) precautions which are specific to modes of transmission (airborne, droplet and contact)[1]

Infection prevention largely depends on placing barriers between a susceptible host (person lacking effective natural or acquired protection) and the microorganisms. Protective barriers are physical, mechanical or chemical processes that help prevent the spread of infectious microorganisms from: Person to person (patient, healthcare client or health worker); and/or Equipment, instruments and environmental surfaces to people[2].

Infection prevention in a healthcare setting requires a comprehensive and coordinated program designed to prevent and control Healthcare-Associated Infections (HAIs). Most HAIs are preventable through simple and effective strategies[3]

HAIs are infections that were not present or incubating at the time of admission and are received by the patient during the course of care in a hospital or any other health care facility[4]. Nosocomial (hospital-acquired) infections are an important focus of infection prevention in all countries, but in developing countries they are a major cause of preventable disease and death[5].

Many different bacteria, viruses, fungi and parasites may cause nosocomial infections. Infections may be caused by a microorganism acquired from another person in the hospital (cross-infection) or may be caused by the patient's own flora (endogenous infection). Some organisms may be acquired from an inanimate object or substances recently contaminated from another human source (environmental infection)[2]

Major factors influencing the development of nosocomial infections are: microbial agent, patient susceptibility, environmental factors and bacterial resistance. A very limited number of studies from developing countries assessed HCAI risk factors by multivariate analysis. The most frequently identified were prolonged length of stay, surgery, intravascular and urinary catheters, and sedative medication[6].

Establishing an infection prevention program with the aim of stopping the transmission of infectious agents is the only way to reduce the occurrence of hospital acquired infections and demonstrates a hospital's commitment to the well-being of patients and staff by minimizing the likelihood of hospital infection and assuring a clean and safe environment. Moreover, hospitals must ensure that the safety of employees, patients and visitors is upheld by preventing the acquisition and transmission of infections. The prevalence of infectious diseases such as tuberculosis, human immunodeficiency virus (HIV), hepatitis B (HBV) and Hepatitis C (HCV) and other infectious diseases in Ethiopia initiates the urgency for hospitals to implement a comprehensive infection prevention program which includes: effective management, staff engagement and involvement, provision of necessary equipment, supplies, monitoring and surveillance, and training. Successful implementation of an infection prevention program requires operational infection prevention action plan to be implemented at hospital level[5,8,9].

It is understood that HAIs in developing countries has been reported to be higher. This is due to lower infrastructure with limited number of staff which is aggravated by insufficient compliance with infection prevention and control activities. It is critical to adhere with standard infection prevention and control activities to avoid spread of infection among both patient and health care providers. It is also fundamental for quality care.

1.2. Statement of the problem

Infection in hospitals and other healthcare settings is a problem for health services around the world and main public health problem which is getting considerable attention and the problems related to this is very serious, which causes major health risks that leads to morbidity, mortality and cost[9]. According to WHO an average of 8.7% of hospital patients had nosocomial infections. Over 1.4 million people world- wide suffer from infectious complications acquired in hospital majority of this is reported from developing regions[2]

The increased length of stay for infected patients is the greatest contributor to cost. Studies showed that the overall increase in the duration of hospitalization for patients with surgical wound infections was 8.2 days, ranging from 3 days for gynecology to 9.9 for general surgery and 19.8 for orthopedic surgery. Prolonged stay not only increases direct costs to patients or payers but also indirect costs due to lost work. The increased use of drugs, the need for isolation, and the use of additional laboratory and other diagnostic studies also contribute to costs[10]

The possibility of transmitting infections in health care setting is higher if essential IPC practices are not accomplished and the underlined factors which increase HCAs are low knowledge and practices towards infection prevention[2].

According to WHO, Nosocomial infections happen universally and affect both developed and developing countries. Infections acquired in health care settings are among the main causes of death and increased morbidity among hospitalized patients. They are a significant burden both for the patient and for public health[2].

The burden of health-care-associated infection in developing countries is high. Prevalence of health-care-associated infection is much higher than proportions reported from Europe and the USA. The overall health-care-associated infection density in adult intensive-care units was 47.9 per 1000 patient-days. Although a well-established data were not available regarding the burden of HAIs in Africa, a systematic review done in the region revealed that its magnitude would be much higher than in the developed nations[1].

In the resource constrained setting like many hospitals in Ethiopia, it is difficult to control the infection rates of patients acquiring hospital acquired infection and exposure of the health care workers to such infections. Materials, human power, trainings, policies and guidelines are needed to promote infection prevention practices. People receiving health and medical care, whether in a hospital or clinic, are at risk of becoming infected unless precautions are taken to prevent infection. Nosocomial (hospital-acquired) infections are a significant problem throughout the world and are increasing. Hospital acquired infection rates range from as low as 1% in a few countries in Europe and the Americas to more than 40% in parts of Asia, Latin America and sub-Saharan Africa [5].

Sever financial constraints , inadequate staffing, overcrowding in Hospitals, inadequate medical and medicine resources and lack of persuasion of the cost effectiveness of infection control create difficulties for the effective implementation of basic infection control program on health facilities[11]

In Africa, literature review shows that hospital-wide prevalence of HAI varies between 2.5% and 14.8%. This is due to different reasons like knowledge gap of the providers, resource limitation, negligence of the providers [12].

Study from Zambia shows that, high compliance of health professionals with infection prevention practice was associated with inclusion of Guidelines in the Curricular, high knowledge of infection prevention/ hospital acquired infections, positive attitude towards infection prevention and availability of materials for infection prevention. The study further reviewed revealed varied levels of compliance on different components of infection prevention[13]

The same is true in Ethiopia that the study conducted on this topic among HCWs in public health facilities in south west only 53.7% of the respondents found to be knowledgeable about infection prevention[14] and other study done at Gondar University Comprehensive Specialized Hospital , Northwest Ethiopia shows that only 12% of health professionals were compliant with infection prevention[15].

In keeping with one of the main goals, which is to improve and maintain the quality of health care delivered to the population the health sector of Ethiopia has introduced sector –wide CASH initiative by Accreditation, Licensing, Monitoring and Capacity Building, it is also part of the Ministry’s strategy for providing safe, effective and efficient quality health services. Since it is well recognized that poor infection prevention and control practices result in patient dissatisfaction, increases patient stay and overall costs including litigation., planners, evaluators, managers and Health care workers should not ignore this life threatening situation[16]

According to assessment of infection prevention and patient safety commodities in Ethiopia there is an inconsistent supply of vital IPPS commodities in health facilities in Ethiopia.[3].Despite a significant improvement in facility of health institutions and in the number and kind of health task forces in Ethiopia particularly in the last two decades reports

showed that there is still high burden of HAIs. On the other hand, except for some few studies on compliance, very limited evidences are available with regard to the level of compliance of professionals with infection prevention practice and associated factors in the country in general and in the study area in particular.

1.3 Significant of the study

The potential for the transmission of infections in the health care setting is high. Both those receiving and providing care in a hospital are at risk of acquiring and transmitting infections through exposure to blood, body fluids or contaminated materials. Implementing effective infection prevention and control program will help to improve the quality of hospital services in turn to implement effective infection prevention program managers as well as implementers of the program should be clear of level of compliance and its associated factors.

On top of these, unless IPP measures are in practice health care facilities can be the source of infection. In countries with limited resource, it is important to develop the health care workers knowledge and practices to IPP. Therefore, this study assessed the Compliance of health professionals to infection prevention and identified associated factors. The result of this study could be used by the hospitals' management and evaluators in planning and targeting appropriate evidence- based measures to improve practice to IPP among health professionals. So it would have a significant input in identifying and improving the pattern of IPC at the hospitals level in the study area and beyond.

Chapter Two: Literature Review

Hospital acquired infections global estimates are not yet available, by integrating the data reported above from studies conducted in both developed and developing countries, it is clear that hundreds of millions of patients are affected by HAI every year around the world and that the burden of disease in low and middle income countries is much higher than in developed countries[17]. According to the available evidence, the impact of HAI implies prolonged hospital stay, long term disability and increased resistance of microorganisms to antimicrobials, massive additional financial burden for health systems, high costs for patients and their family, and unnecessary deaths Very few studies from developing countries assessed HAI impact and no report provided national estimates[11]

Study done at Bahir Dar shows that 54.2% of respondents had safe practice and 45.8% of them had unsafe practice during the assessment. Only 8.8% of respondents practice hand hygiene according to recommendations and the overall practice of PPE was 35.6% [18]

Study done in Addis Ababa on knowledge and practice of health professionals towards tuberculosis infection control indicate that 64% of health professionals follow standard guidelines, 50.2% use respiratory personal protective while only 21.3% of respondent had surgical mask for tuberculosis [19]

Study conducted on hand hygiene practice of health professionals at Ghana Korle BU teaching Hospital indicate that the practice was 15% among doctors and 16.2% among nurses and the basic facilities were limited in all service provision center [20]

Research conducted at Trinidad Tobago regional Hospitals to assess attitude, knowledge and practice of health professionals revealed that only 44% of participants had good practice to prevent Hospital acquired infections[21]The American International Health Alliance (AIHA) conducted surveys of 50 hospitals in America, 74% the surveyed hospitals reported Nosocomial Infections as an important problem. All hospitals reported functioning infection control committees which were staffed appropriately for the most part. Eighty eight percent of the institutions conducted surveillance for Nosocomial Infections and 78% of institutions performing surgery conducted wound infection surveillance. Nearly all hospitals practiced “standard precautions” related to needles and gloves. Eleven hospitals reported cases of hepatitis B or C in employees during the past two years. Infection control guidelines or

protocols for nursing were used in 82% of the reporting hospitals and formal infection control (IC) protocols were in place in 75% of the reporting hospitals. Overall, infection control had been accepted[22]

WHO suggests several basics of infection prevention and control practices. However, only a few of the national guidelines and directives provide a legally necessary framework for the [IPP] infrastructure and training needs to be implemented in healthcare institutions of their respective countries[23].

Resource limitation makes it difficult to control the infection rates and exposure of patients and health service providers to health care–associated infections. Accordingly, materials, human resources, training, policies, and guidelines are needed to promote appropriate infection prevention and patient safety practices[7].

2.2. Factors associated with infection prevention practice

Study conducted in India on barriers and facilitators to infection control show that, Heavy patient work load, Perceived understaffing, Uncomfortable with PPE and frequency of IC training categorize as barriers and ample IC supplies, institution climate of prioritize IC, staff knowledge and integration of IC committee with clinical care were categorized as facilitators for IC practices[24]

Studies conducted in India to assess the knowledge of infection control practice among intensive care unit nurses show that the overall awareness was good in 37% of the nurses, average in 40% and below average in 18%. Only 5% of the nurses had excellent knowledge. More experienced nurses had good Knowledge of infection control practices. It also revealed that knowledge of nurses towards infection prevention practice was associated with experience they have nurses who have >8 years of experience had good knowledge of infection control practice only 6% of nurses who have, 5 years of experience have excellent knowledge[25].

Other study conducted in India Dow university of Health Science show that The level of knowledge about and compliance with infection control measures was poor among the study subjects. Attributable reasons could be inadequate training for infection control measures, inadequate supply of personal protective equipment. and standard use of face mask, gloves, eyewear, and protective clothing as standard infection control measures was practiced only by two subjects from total enrolled of 245 subjects[26]

Study from Nigeria state that there was no statistically significant difference in the practice of standard precaution among the male providers compared to females, age of health workers, years of experience on the job, and marital status. Awareness of National policy on injection safety was not statistically significantly associated with practice of universal precaution among healthcare providers. Similarly, recent training in infection control practices was not significantly associated with the practice of universal precaution[27]

Other interventional study in Nigeria revealed that training had an effect on infection risk reduction and a significant difference in the mean perception score of infection control between the experimental and control groups[28]

Study in south east of Ethiopia show that sex, profession, service year, availability of water for hand washing in the healthcare worker's ward or department, the presence of an infection prevention committee, availability of infection prevention guidelines, and ever having taken taking training on infection prevention were factors which were significantly associated with healthcare workers' infection prevention practice . Those healthcare workers who have served for >10 years were about 3.41 times more likely compliantwith infection prevention than those whose service years <5 years [14]

In addition research conducted at Debre Markos referral hospital North West Ethiopia indicates that healthcare professionals who had good practice for infection prevention activities were found to be 57.3%. Work experience of above ten years had the highest odds of attaining infection prevention practice/activities than those who had work experience of fewer than five years [4]

The current experience of Ethiopian hospitals lends itself to a high risk of infection for all patient, patient families and hospital staff alike. The problem that exist include lack of consistent running water for use in patient care and hospital sanitation, lack of basic essential items needed for infection prevention and lack of surveillance and monitoring system for infection. Findings from the studies also revealed that the observed HAI infections are more of systemic infection than localized wound or soft tissue infection[29]

Study in Addis Ababa, capital of Ethiopia shows that health professionals infection prevention practice was significantly associated with experience, Training, Educational level and knowledge of health professional[30].

Studies in Bahirdar city administration shows that there is no significant difference in practicing infection prevention among different level health professionals [18]. Other analysis of studies from Amhara region showed that, nurses were 2.09 times more likely to practice infection control practice compared to physicians with The result showed that other professions like the health officer and Health assistants were 69% less likely to practice infection control compared to physicians with[12]

Study at MizanAman General Hospital show that Among 135 health professionals 89 (65.6%) of them had ever participated in any training program about infection prevention/ standard precaution. All of the respondents know that contaminated needle and sharp materials could transmit disease causing agents. Some of the mentioned diseases were HIV (98.5%), hepatitis (HBV) (84.4%), hepatitis (HCV) (80.0%), tetanus (clostridium tetani) (57.8%), malaria (plasmodium) (17.0%), and tuberculosis (M.tuberculosis) (2.2%)[31]

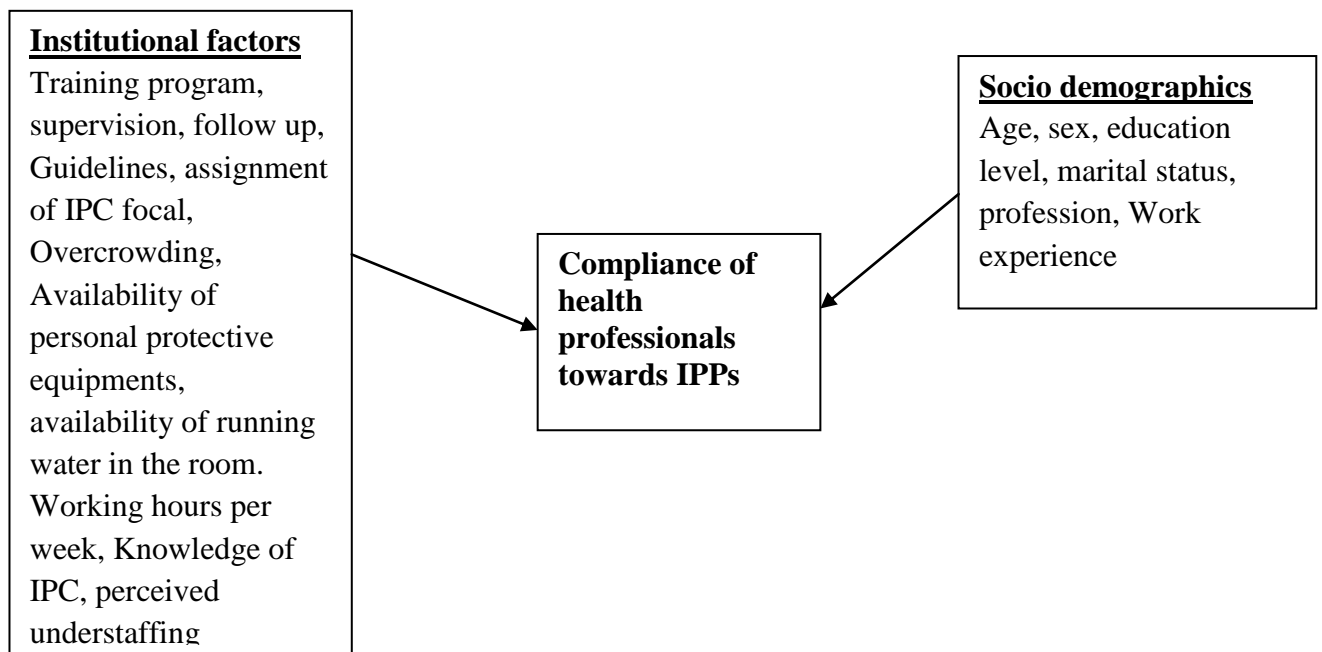


Figure 1: Conceptual framework on compliance of health professionals towards infection prevention practices developed after reviewing different literatures on factors associated with infection prevention practice.

Chapter Three: Objectives

3.1. General objective

- To assess compliance with infection prevention practice and associated factors among health professionals in public hospitals of Kembata Tembaro Zone, SNNP Regional state in 2019

3.2. Specific objectives

- To assess compliance with infection prevention practices of health professionals in 2019.
- To identify factors associated with infection prevention practices by health professionals in 2019.

Chapter Four: Methods and Materials

4.1. Study area and period

The study was conducted in Kembata Tembaro Zone public hospitals, SNNP Regional state. From November 1-May 30/2019. Kembata Tembaro Zone is found at a distance of 315 km from Addis Ababa, capital of Ethiopia, and 105 km from Hawassa, capital of SNNP regional state. It has a total population of 920,012 who get health care service from one General hospital, three primary hospitals, 35 health centers, 160 health posts and private health facilities (three medium clinics, one primary clinic and eight pharmacy) . It contains 8 districts and 2 town administrations with total of 908 health professionals of which 498 belongs to four public hospitals in the zone

4.2. Study design

Facility based cross-sectional study design was employed using quantitative and qualitative data collection methods.

4.3. Populations

4.3.1. Source population

The source population was all health professionals who are working in the all Public hospitals (Durame General Hospital, Shinshicho primary Hospital, Mudula primary Hospital, Doyogena primary Hospital), found in Kembata Tembaro Zone, SNNP Regional State

4.3.2. Study population

For quantitative aspect selected health care professionals (doctors, Health officers, 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, for observation health professionals who are in selected service rooms during data collection was observed whereas for qualitative aspect for FGD purposefully selected health professionals.

4.3.3 Inclusion and exclusion criteria

Exclusion criteria

- Health professionals who are not present due to different reasons (annual leave, sick leave, and training) during data collection period.

Inclusion

- Health care professionals (doctors, Health officers, 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

4.4. Sampling size and sampling technique

4.4.1. Sample size determination

The sample size for quantitative study was calculated using a single population proportion formula considering the following assumptions:-

- $(Z_{1-\alpha/2})^2$ = the reliability coefficient 95% (i.e. 1.96). by taking of proportion of 54% which is from study conducted at Bahir Dar regarding practice of health professionals on infection prevention control and it give maximum sample size So that , the findings would be more valid. Absolute precision (d) assumed to be 5%. Where N= 498.

$$n = \frac{(Z_{1-\alpha/2})^2 * p(1-p)}{d^2}$$

d²

Where n= is sample size

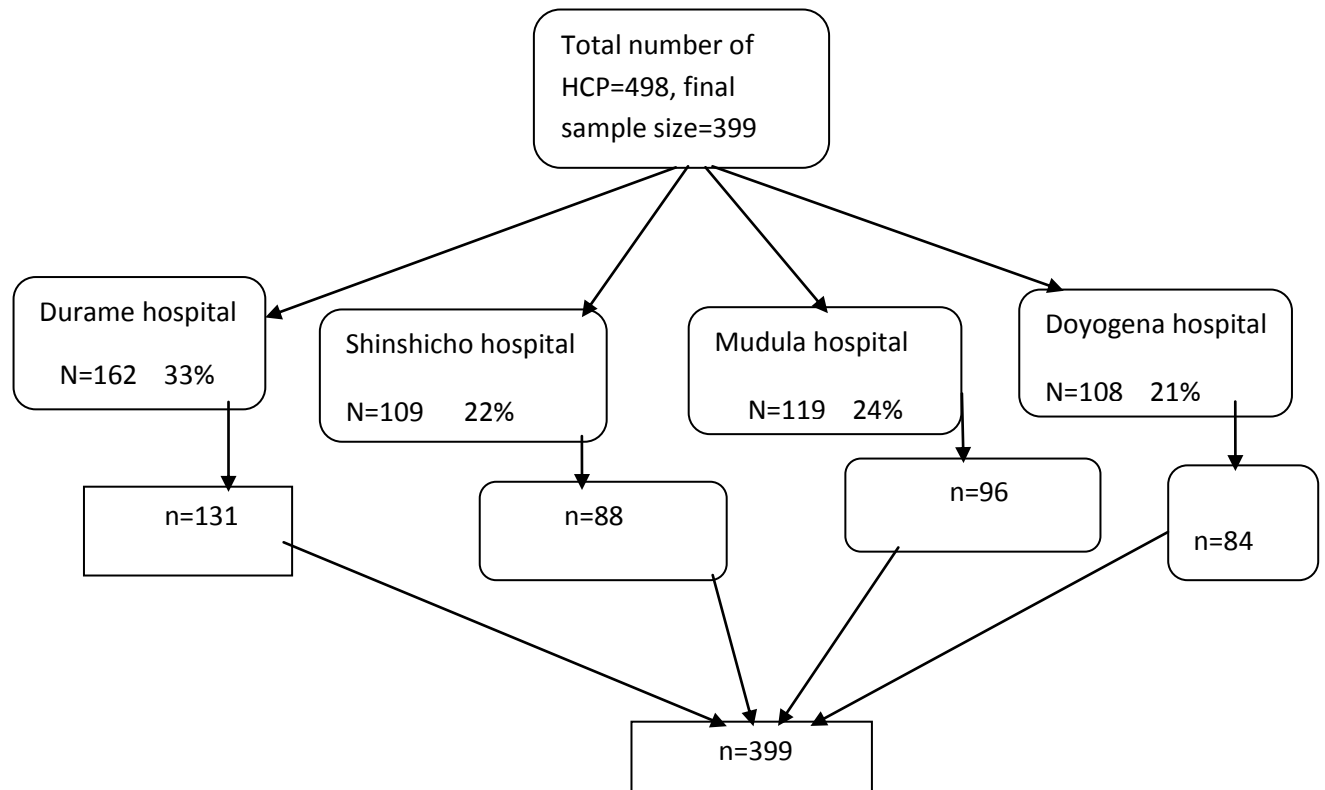
$$\diamond \frac{1.96^2 * 0.54(1-0.54)}{0.05^2} = \frac{3.84 * 0.24}{0.0025} = \frac{0.89}{0.0025} = 380$$

and by adding 5% potential non-response rate, the final sample size for this study was 399.

For qualitative (FGD) aspect purposive selection was conducted considering their role in infection prevention and control program in respective hospitals and a total of four FGD were conducted for an average of 1-2 hours. Observation was conducted at all hospitals. For observation emergency, outpatient, laboratory, MCH, injection and dressing, hand hygiene was included meanwhile sharp waste segregation at the site of work in the study hospitals were focus of observation. A total of 80 procedures were observed in the hospitals.

4.4.2. Sampling technique

The sample size was allocated using proportional allocation to size of number of professional in respective hospitals. The study subjects were selected using simple random sampling technique using computers generating random number based on the sampling frame.



For observation part the researcher considered to include different days like Holy day, weekends, and market days to observe the procedures during one month data collection time 20 MCH procedures, 20 injections and dressings, 20 hand hygiene practices, 20 personal protective equipment's practices as well as waste management of the hospitals was observed (5 procedures from each category were observed from respective hospital)

For qualitative aspect one FGD per hospital was conducted and professionals were selected purposefully from respective hospitals (Durame general Hospital=9 discussants, Shinshicho primary Hospital=11 discussants, Mudula primary Hospital=10 discussants, Doyogena primary Hospital=10 discussants).

4.5. Data collection Tools and procedures

4.5.1. Data collection instruments

The data collection procedures were employed using quantitative and qualitative method. In quantitative method interviewer administered questionnaires which was adopted from study done in Bahir-Dar City Administration in 2014 on related topic and another literatures was used to collect data from the health professionals of the facilities [32]. Questionnaire is divided into four parts. The first part asks about socio-demographic of the respondents, second guideline and norms, third knowledge of the respondent and fourth practices to infection prevention of health professionals in the study health facilities. It was used to assess the status of infection prevention compliance and associated factors from the respondents of 399 health professionals selected randomly.

The qualitative method involves FGD and assesses factors affecting infection prevention practice of health professionals. The purpose of employing FGD was to get detail information, which might not be found during quantitative data collection. Participants were health professionals those who have better role and access to observe infection prevention practices and those directly or indirectly involved in the service provision process that were willing to share their ideas and knowledge. For qualitative aspect FGD guideline was used to facilitate the discussion on major components of infection prevention. FGD guideline was developed by principal investigator.

4.5.2. Personnel

All data were collected by four health officers from health centers and one supervisor from district health office who is masters holder in general public health. Generally the process of the data collection was monitored by principal investigator.

4.5.3. Data collection methods

For quantitative data Interviewer administered structured questionnaire and observation checklist were used. For qualitative aspect FGD guideline which is used to recall and guide major areas of infection prevention activates and procedures. Before proceeding into data collection data collectors were attended 2 day training about general aim of the study and role of them after that ethical procedures was followed at each step during the course of data collection and necessary resources were assured by principal investigator.

4.6. Variables

4.6.1 Dependent variables

- Compliance of health professionals towards IPP

4.6.2 Independent variables

- Sex
- Age
- Educational level
- Working hours per week
- profession
- Marital status
- Work experience
- IP training
- Availability of IP guideline
- Knowledge on IP

4.7 Operational definitions

Hand hygiene- 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[20]. 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 patient's surroundings.

Compliance-refers to the extent that health care workers implement recommended strategies of standard precautions. In this study the healthcare professional's infection prevention practice was measured by ten items in which responses were made in a two option. To analyze the practice, similar procedures was followed a score of 1 was assigned for each acceptable or correct practice and 0 for unacceptable, hence the total score of infection prevention practice ranged from 0 to 10. Accordingly, healthcare workers compliance with infection prevention practice was classified into two categories: safe or compliant (if above the mean) and unsafe or not compliant

Knowledge - In this study, knowledge refers to the awareness of basic concept of infection prevention:-Health professional's knowledge regarding infection prevention was measured by 10 'Yes or No' questions. A scoring system was used in which the respondents correct and incorrect answer asked for the questions was allocated "1" or "0" points respectively. Knowledge score

wassum up to give a total knowledge score for each health care professionals. The total knowledge score that was ranged from 0 to 10 was classified in to two categories of response. Knowledgeable if above the mean and not knowledgeable equal to or below the mean[14].

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 utilization 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 Data processing and analysis

All filled questionnaire were checked for completeness and consistency, and data entry was made using the Epidata 3.1 software. Then the data was exported to SPSS statistical package version 20 for analysis. Frequencies, proportion, and summary statistics were used to describe the study population in relation to relevant variables and presented in tables.

Bivariate logistic regression analysis was carried out to identify variables that are significantly associated with compliance with infection prevention practices of health professionals. Collinearity was diagnosed using VIF and tolerance and also Hoshmer-Lemeshow and Omnibus test was performed to test for model fitness. 70% of subjects are correctly classified by the model this indicates good model fitness to data. Those variables in bivariate logistic regression analysis whose p value is less than 0.25 was included in multiple logistic regressions. Then a multivariable logistic regression analysis was performed for those candidate variables in bivariate analysis and investigates independent predictors by controlling for possible confounders. Finally, variables whose p value less than 0.05 ($p < 0.05$) in logistic regression were considered as statistically significant association and the strength of association was expressed by interpreting the odds ratio.

For qualitative aspect data was analyzed using thematic analysis technique descriptively. Initially the record (both written and audio record) of the data was internalized by repeat reading and hearing of the record then index themes was identified and transcribed coded and thematized manually.

4.9. Data quality management

The questionnaire was translated into the local language of Amharic then back to English in order to look for clarity and consistency of the questions. Data collectors (health officers) and supervisors were recruited and training was given for 2 consecutive days before data collection. During the actual data collection trained supervisor will examine the collected data on daily bases. At the end of each data collection day the principal investigator will check for the completeness of filled questionnaires and whether recorded information makes sense or not.

The collected data was reviewed, checked, coded, entered and cleaned for completeness and relevance of the data by the supervisor and principal investigator each day before analysis. The distribution and the internal consistencies of the responses were checked. Incomplete responses were discarded.

4.10 Ethical consideration

Ethical clearance was obtained from Institutional Review Board of Jimma University Institute of Health. An official letter of cooperation was also written to Kembata Tembaro Zonal Health Department from the Review Board. The Zonal Health Department wrote support letter to the district health offices. The district health office and the four selected hospitals were asked for an official letter to get permission. Data collectors were trained how to handle confidentiality and privacy using consent form attached to each questionnaire. Confidentiality was assured by excluding study participants name during the period of data collection. The study purpose, procedure and duration, possible risks and benefits of the study were clearly explained for study participants. Data collectors inform participants to enroll in the study if they are willing. Verbal informed consent was obtained from each respondent before data collection and then data was gathered. Any study participant willing to engage in the study and those who want to stop interview at any time was allowed to do so.

4.11 Dissemination plan

The findings will be presented to the Jimma University scientific community and submitted to the department of Health Policy and Management, Faculty of Public Health.

The findings will also be communicated to the local health planners and other relevant stakeholders at zonal and Woreda level in the area to enable them take recommendations in to consideration during their planning process.

It can also be communicated to health planners and managers at regional level. Publications in peer reviewed, national or international journals will also be considered.

Chapter Five: Results

5.1 Socio Demographic Characteristics of Respondents

Out of 399 sampled health professionals, 391 were participated in this study, which provided the response rate of 97.9%. More than half of respondents 204(52.2%) were male by their sex and 201 (51.4%) were age range of ≥ 30 years old. The majority of the respondents (215, 55%) were married and 250(63.9%) were nurses by their profession. Regarding their service years 191 (48.8%) had served for less than 5 years. Three hundred six one (92.3 %) were worked above 40 hours per week and 329(84.1) of participants were first-degree holders (Table 1).

Table 1 Socio-demographic characteristics of health professionals in public hospitals of kembata Tembaro Zone, South Ethiopia, April 2019.

Serial no	Variable	Categories	Number	Percent
1	Sex	Male	204	52.2
		Female	187	47.8
2	Age	<30	190	48.6
		≥ 30	201	51.4
3	Marital status	Married	215	55
		Single	152	38.9
		Divorced	10	2.6
		Widowed	14	3.6
4	Profession	Nurse	251	64.2
		Doctor	82	21
		Midwife	52	13.3
		Laboratory technicians	6	1.5
5	Year of service	<5years	171	43.7
		5-9 years	198	50.6
		10-14 years	22	5.7
6	Hours worked per week	Less than 40	9	2.3
		40 hours	21	5.4
		Above 40	361	92.3
7	Educational level	Diploma	71	18.2
		First degree	281	71.9
		Second degree and above	39	10

5.2 Health Facility related variables.

Of total respondents, 373 (95.4%) were aware of presence of infection prevention guideline and 352(94.3%)were familiar with this guidelines. Majority of study subjects 293(74.9%) have participated in any training program about infection prevention or standard precaution in the last one year. The majority of the participants 361 (92.3%) were vaccinated for hepatitis B virus and the rest 30(7.7%) were not vaccinated. The reason for not vaccinated were, 18(60%) participants response were not aware about necessity of vaccine and 12(40%) of participants response were unavailable of vaccine of HBV in the facilities (table 2).

Table 2facility based variables on infection prevention practice of public hospitals, Kembata Tembaro zone, SNNP regional state, Ethiopia, 2019.

Variables (n=391)		Frequency	percent
Availability of IP guideline in the hospital	yes	373	95.4
Familiarity with this guideline	yes	352	94.3
Training status on the standard precaution in l one year	yes	293	74.9
Vaccinated for hepatitis B virus	yes	361	92.3
Reason for Not vaccinated (n=30)	Lack of awareness vaccine	18	60
	Unavailability of anti-gene	12	40

5.3 Knowledge of health professionals on infection prevention and control.

Almost all of health professionals (384, 98.2%) were heard about infection prevention and 389(99.5%) were thought that alcohol based antiseptic is as effective as soap and water if hands are not visibly dirty. While only 160(40.9%) of respondents were said that safety box should be closed /sealed when three quarters filled (table 3).

Table 3 Health professionals knowledge regarding infection prevention practice in public hospitals of Kembata Tembaro Zone, South Ethiopia, April 2019 (n = 391)

Knowledge items	Answer	Number	percent
I have heard about infection prevention principles	Yes	384	98.2
	No	7	1.8
Gloves cannot provide complete protection against transmission of infections	Yes	337	86.2
	No	54	13.8
Washing hands with soap or use of an alcohol based antiseptic decreases the risk of transmission of healthcare acquired infections	Yes	386	98.7
	No	5	1.3
Use of an alcohol based antiseptic for hand hygiene is as effective as soap and water if hands are not visibly dirty	Yes	389	99.5
	No	2	0.5
Gloves should be worn if blood or body fluid exposure is anticipated	Yes	391	100
	No	0	0
Hand washing is necessary before procedures are performed	Yes	390	99.7
	No	1	0.3
Tuberculosis (TB) is carried in airborne particles that are generated from patients with active pulmonary tuberculosis	Yes	390	99.7
	No	1	0.3
There is no need to change gloves between patients as long as there is no visible contamination	Yes	335	85.7
	No	56	14.3
Do you know how to prepare 0.5% chlorine solution?	Yes	299	76.5
	No	92	23.5
Safety box should be closed/sealed when three quarters filled	Yes	160	40.9
	No	231	59.1

Overall majority of health professionals 280(71.6%) were classified as knowledgeable and the rest 111(28.4%) were not knowledgeable (fig 2)

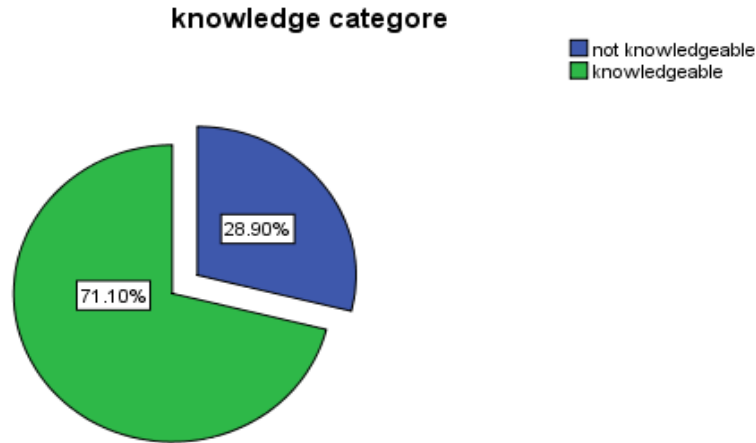


Figure 2 Health professionals knowledge on infection prevention and control in public hospitals of Kembata Tembaro Zone, southern Ethiopia April 2019.

FGD Participants from Durame general hospital identified professionals' turnover as the difficulty to infection control. This was also identified as an obstacle by the other two hospitals. Many participants reported high turnover rates, with professionals' leaving primarily to take higher paying positions. This was complicated by the fact that many new professionals' entered directly from teaching institutions, with no any preceding occupation experience with infection prevention practices.

Participates also raised encouraging issues to infection prevention practices from the hospitals side. According to participants there is a difficulty to fully practice in line with the guideline despite these difficulties hospitals were committed to infection control and have facilitated it through the creation and staffing of a large infection control team according to Ethiopian hospitals implementation guideline. This includes different professionals dedicated of full-time to infection control activities. They also focus on sharing responsibilities from the core managements of hospitals by stating that hospital has also designated several physicians as leaders in ongoing infection control and CASH initiatives. These actions have created an institutional climate that prioritizes and values infection control.

During FGD 27 years old IP focal person stated that *“nowa day there is huge effort by government to equip professionals with adequate knowledge by delivering trainings at each service areas and by availing necessary supplies including different vaccines since infection prevention is one of target area in the Ethiopian hospitals transformation plan”*

5.4 Major Infection Prevention and Control Practices

5.4.1. Hand Hygiene Practices

Among 391 health professionals, the majority 329 (84.1%) reported that they are practicing hand hygiene practices before starting the procedure and, 150(38.4%) reported washing their hand after completing the procedure and contact with bodily fluids.(Table 4).

Table 4Hand hygiene practices of health professionals in public hospitals, Kembata Tembaro zone, SNNP regional state, Ethiopia, 2019.

s.no	Hand hygiene practicing time (N=391)		Frequency	percent
1	Before starting the procedure	Yes	329	84.1
		No	62	15.9
2	After completing the procedure and contact with body fluids	Yes	150	38.4
		No	241	61.6
3	After touching the patient	Yes	120	30.7
		No	271	69.3
4	Immediately after removing gloves	Yes	114	29.2
		No	277	70.8
5	After touching a patients surrounding	Yes	120	30.7
		No	271	69.3

Among 391 respondents 273(69.8) reported that they clean their hands during direct patient contact always, 118(30.2%) didn't do that, the major reasons reported for poor hand hygiene practice was, water and soap or alcohol based hand rub is not available 77(65.8%), it is waste of time and it increase patient waiting time 40(22.5%) (table 5).

Table 5 Major reasons for poor hand hygiene of health professionals in public hospitals, Kembata Tembaro zone, SNNP regional state, Ethiopia, 2019.

S.no	Reasons for not cleaning hands always	Number	Perce
1	water and soap or alcohol based hand rub is not availa	77	65.8
2	it is waste of time and it increase patient waiting time	40	22.5

During FGD all participants agreed on positive aspect of hand hygiene and they claim that there is inconsistency of adherence to hand hygiene among health professionals and they mentioned water shortage, alcohol pads unavailability when needed, failure of follow up from institutions, time shortage and professional personal behavior as reasons. Some of the participants raised positive factorsto hand hygiene like commitment from government by preparing trainings , preparing hand

washing facility using different local materials like pail and support from NGOs specifically on hand hygiene

Majority of health professionals more concerned about availability of water and soap or alcohol hand rub, 31 years old nurse said that “*hand hygiene is critical for health professionals as well as for clients but there is deep-rooted water problem in our hospital I am here for the last 5 years but I didn’t notice time when running water is available we try to solve the problem by collecting water by pail but that is not per standard*”.

5.4.2. Personal Protective Equipment use

Majority of study participants, 358(91.6%) and 318(81.3%) responded that they utilize gloves and gown while they had given care for patients respectively. Two hundred eight two (72.1%) of health professionals responded that they used mask/eye protections for procedures likely to generate droplets/splash (table 6).

Table 6: Personal protective equipment utilization of health professionals in public hospitals of Kembata Tembaro zone SNNP, regional state, Ethiopia, 2019

S.no	Personal protective equipment		Frequency	percent
1	Glove use for all patients	Yes	358	91.6
		No	33	8.4
2	Gown/plastic apron wore in working place	Yes	318	81.3
		No	73	18.7
3	Mask/eye protection use for procedures likely to generate droplets/splash	Yes	282	72.1
		No	109	27.9
4	Wear boots/covered shoe in working environment	Yes	81	20.7
		No	310	79.3

During FGD Participants overwhelmingly reported that inadequate supply of personal protective equipment was not readily available for use. They claim that on the general wards, gowns, gloves, and masks were stored outside of the rooms and masks, and shoe covers, were available only within OR rooms., professionals often put on a mask before entering the OR. Beside their availability, participants reported that both healthcare professionals and visitors struggled with mask compliance for patients under droplet or airborne precautions, in large part because of issues surrounding comfort.

Participants made spotlight on shortage of supply for utilization of personal protective equipments but there is disagreements for these reason from some of the participants they claim that beside the shortage there is widespread negligence from professionals in the usage of personal protective equipment.

One physician from OPD department stated that *“in our setup availing all useful personal protective equipments was difficult but there is a problem even on practical and handy ones like gown and gloves”*. He continuous his idea like *“even though there is problem of supply and regulation there is well-known negligence from professionals in utilization of personal protective equipments”*

5.4.3. Safe Injection Practice

Of total of 391 respondents, 346(88.5%) reported that they don't recap used needles and 22(5.6%) were stated that they removed needles from disposable syringe (table 7).

Table 7: Safe injection practice of health professionals in public hospitals of Kembata Tembaro zone SNNP, regional state, Ethiopia, 2019

S.No	Response to the question (what do you do after injection?)	frequency	percent
1	don't recap used needles	346	88.5
2	remove needles from disposable syringe	22	5.6
3	Recap used needles	21	5.4
4	Bend the needle by hand to prevent injury	2	.5

5.4.3.1 Injuries related to sharp materials and their reasons

One hundred twenty three (31.5%) of health professionals faced to needle stick/sharp injury in the last one year. The report showed that Sudden movement of patient 70 (60.1%) and recapping of used needle 40(32.5%) are major causes for accidents followed by sharp collection at the site of work 7(5.6%)(table 8).

Table 8: Major causes for sharp injuries among health professionals in public hospitals of Kembata Tembaro zone SNNP, regional state, Ethiopia, 2019

s.no	Major causes for accidents/injury	Number	percent
1	Encountered sharp injury (n=391))	123	31.5%
2	Sudden movement of patient	70	60.1
3	Recapping of used needle	40	32.5
4	Sharp collection at the site of work	7	5.6
5	Others*	6	1.8

* Health professionals who doesn't recall cause of injury

5.4.4 Sharp waste segregation practice

Regarding sharp waste segregation practices, majority of respondents 306 (78.6%) used a puncture proof container/safety box followed by those who use any available container 54(13.8), 18(4.6%) use a dust bin having plastic cover, and 13(3.3%) use dust bin (Fig. 3).

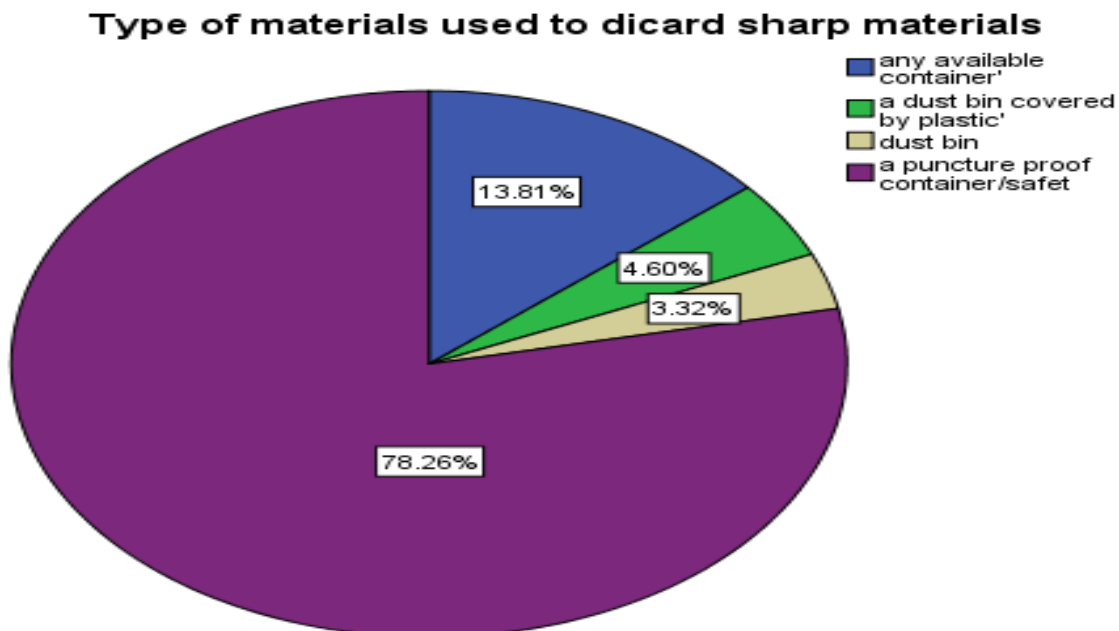


Figure 3 Sharps collection and disposal materials used among health professionals in public hospitals of Kembata Tembaro Zone SNNP Regional State, South Ethiopia, 2019 (n=391)

During FGD at one of the hospital 38 years midwife stated that” used syringes, needles and blades are all put in a local bin and it is placed in the bed side of patients that is also unsafe for the patients. In the hospital there is no safety box at all for last 3 months. After all this syringes, needles and blades are all mixed with other infectious and noninfectious wastes at single bin this indicates that there is no waste segregation at the site of its production”. She extend her idea as “Concerning incident reporting, there is no registrations at all departments and there is no formally established system for reporting incidents such as needle stick injury, cuts and splash of potentially infectious body fluids”

The second respondent continued the discussion and said “generally there is problems in waste segregation, handling, transport& disposal majority of problems are pointed towards supply shortage especially safety box as you seen currently we are using a dust bin to collect sharps”.

5.5 Observation assessment result

Assessment of same functional departments of the hospital based on the given performance checklist for selected service area indicated that infection prevention was consistently and thoroughly practiced in operation rooms, whereas, in surgical ward, labor and delivery unit,. And in the rest of client service areas training and follow up needed on recommended infection prevention practices.

In addition to this 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 according to national standard. No documented feedback of IPC practice was seen in each department. The studied facilities also have incinerator but 2 of 4 observed hospitals had no ash pit around the 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.

Health professionals were using water, soap and alcohol based hand rub for their hand hygiene practices. Of 80 observed procedures and hand hygiene practices, the highest rate 62 (77.5%) were observed after completing their procedures and after glove removal On the other hand, least practices were observed before starting the procedures 15 (18.7%).

During observation of the PPE utilization during procedures all (n=80) health professionals wore gown in their working place and the majority of 69(86.2%) health care workers used glove in their work, furthermore, from observed health professionals utilization of mask 8(10%), eye protection 5(6.2%), and 55(68%) health professionals were utilizing covered shoes.

Table 9 Hand hygiene and Personal protective equipment utilization of health professionals in public hospitals of Kembata Tembaro zone SNNP, regional state, Ethiopia, 2019

s. No	Component of IP(n=8	Activity observed	Number	percent	remark
1	Hand hygiene	After completing procedure	62	77.5	
		Before starting procedure	15	18.7	
		None	3	4.8	
2	Personal protective equipments	Wore gown	80	100	
		Wore gloves	69	86.2	
		Covered shoes	55	68	

The result of our observation also showed that all injection provided (n=20) were used new needle and syringes from pack. 4(20%) participants were practicing recapping of needles after injection and none of them try to bend the need after injection. Result from our observation also showed that only 11(55%) used needles and syringes were collected in to safety box, 7(35%) were collected in local dust bin and the rest 3(15%) were left on injection preparation table.

Table 10: Safe injection practice of health professionals in public hospitals of Kembata Tembaro zone SNNP, regional state, Ethiopia, 2019

s.no	Safe injection practices(n=20)	Number	percents
1	Uses new needle and from pack	20	100
2	Recapping of needles after injection	4	20
3	Needles collected in to safety box	11	55
4	Needles collected in to local bin	7	35
5	Needles left on injection preparation table	2	10

5.6 Compliance of health professionals with infection prevention practice.

Almost all of study subjects, 384(98.7%), 381(98%) and 364(93.1%) were comply to antiseptic hand rub to clean their hands, use personal protective equipments and reusable medical instruments in chlorine solution for 10 minutes respectively(table 11)

Table 11compliance among Health professionals regarding infection prevention practice in public hospitals of Kembata Tembaro Zone, South Ethiopia, April 2019 (n = 391)

Practice item	Correct response	Number	Percentage
Do you apply antiseptic hand rub to clean hands?	Yes	386	98.7
Did you practice high-level disinfection where sterilization is not applicable?	Yes	383	98
Do you use all Personal Protective Equipment's (PPE) to prevent the risk of acquiring and/or transmitting infection?	Yes	381	97.4
Did you segregate liquid and solid healthcare wastes	Yes	22	16.6
Do you incinerate or bury used sharp materials?	Yes	326	83.6
When do you change disinfectant chlorine solutions?	Every 24 hours(or below)	376	96.2
For how long do you soak reusable medical instruments in chlorine solution?	With in 10 minute	364	93.1
How often do you use glove (both hands)?	Always	314	80.3
Do you wear the necessary personal protective equipment (PPE) such as gloves, apron, goggles and mask, if splashes and spills of any body fluids are likely?	Yes	228	58.3
Where do you usually put sharp disposal boxes?	Hand reach area	251	64.2

From total enrolled 391 respondents 226(57.6%) were compliant and the rest 165(42.2%) were not compliant towards infection prevention practices (fig 4).

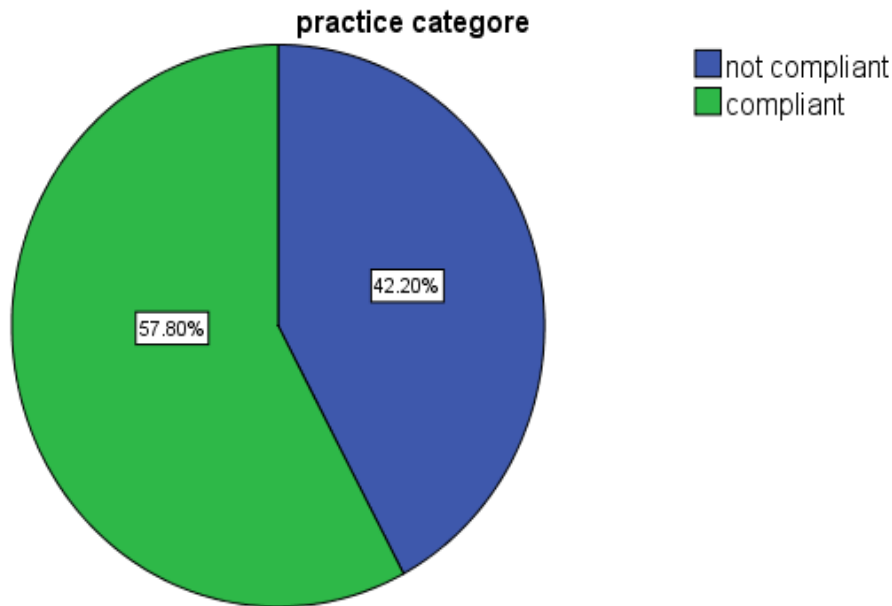


Figure 4 Health professionals compliance towards infection prevention practice in public hospitals of Kembata Tembaro Zone, southern Ethiopia April 2019.

5.7. Predicators on the compliance towards infection prevention practice.

To identify candidates' factors for multivariable logistic regression of Compliance of health professionals towards infection prevention practice among respondents, binary logistic regression was computed. Among factors Sex, Age, Marital status, profession, Work experience by years, Availability of guideline in the working department, Educational level, Attending training programs on IP and Knowledge on IP were candidates ($p < 0.25$) with compliance of health professionals towards IPP in the bivariate logistic regression analysis (table 12).

Table 12 Final predictors of compliance towards infection prevention practice among health professionals in public hospitals of Kembata Tembaro, SNNPRS, South Ethiopia April 2019

Variables (n=391)	categories	Infection prevention practice		COR 95% CI	AOR 95% CI	P- value
		Comply	Not comply			
Sex	Male	151	53	1	1	
	Female	75	112	0.377(0.249-0.570)	0.384(0.231-0.637)	<0.001*
Age	<30	87	103	1	1	
	>=30	139	62	2.65(1.75-4.01)	1.388(0.656-2.939)	0.391
Marital Status	Single	56	96	0.237(0.154-0.365)	1	
	Ever Married	170	69	1	2.245(1.300-3.876)	0.004*
Category of Professions	Doctor	53	29	1	1	
	Nurse	130	121	0.588(0.351-0.985)	0.485(0.259-0.910)	0.025*
	Others	43	15	1.569(0.747-3.294)	1.169(0.499-2.740)	0.719
Service year	Less than or equal to five years	102	69	1	1	
	Greater than five years	63	157	0.2271(.178-.414)	1.424(0.729-2.779)	0.301
Educational level	Diploma	40	31	1	1	
	First degree	157	124	0.981(0.581-1.658)	0.568(0.284-1.136)	0.110
	Second degree and above	29	10	2.247(0.953-5.302)	1.514(0.538-4.269)	0.433
Availability of guide line in working department	No	41	69	0.308(0.195-0.488)	0.606(0.334-1.097)	0.098
	Yes	185	96	1	1	
Attending training programs on IP	No	41	83	0.219(0.139-0.345)	0.32(0.177-0.593)	<0.001*
	Yes	185	82	1	1	
Knowledge on IP	Knowledgeable	181	97	1	1	
	Not knowledgeable	45	68	0.355(0.226-0.556)	0.39(0.227-0.673)	<0.001*

- Significant at P-value less than 0.05, COR: Crude odds ratio, AOR: Adjusted odds ratio

Variables which were significant in the bivariate logistic regression analysis (Sex, Age, Marital status, profession, Work experience by years, Availability of guide line in the working department, Educational level, Attending training programs on IP and Knowledge on infection prevention) whose $p < 0.25$ were entered and analyzed together by multivariable logistic

regression. After controlling for the effects of potentially confounding variables using multivariable logistic regression, Sex, Marital status, profession, Knowledge on IP and Attending training programs on IP were found to be significantly associated with compliance of health professionals towards IPP at P-value <0.05.

Females were 62% less likely compliant with infection prevention practices than males (AOR=0.38, 95% CI [0.231-0.637])

Health professionals who have married were about 2.2 times more likely to comply with infection prevention practice than those who are single. (AOR= 2.245, 95% CI [1.300-3.876])

Health professionals who were not attended training on infection prevention was 68% less likely Compliant with infection prevention practice than health professionals who were attended the infection prevention training. (AOR=0.32, 95% CI [0.177-0.593])

Health professionals were not knowledgeable on infection prevention practice was about 61% less likely Comply with infection prevention practice than health professionals who were knowledgeable. (AOR= 0.39, 95% CI [0.227-0.673])

During FGD facilitators tried to address possible barriers and facilitators of infection prevention practices in each respective hospitals during discussion. Lion share of FGD participants claim that there is no single responsible body for low performance of professionals towards IPP every stakeholder has significant and irreplaceable role on every day activities of hospital. Major stakeholders raised by discussants are Government, personal professionals 'behavior, local authorities, hospital management body's, including the whole community. Without coordinating effort from all these stakeholders it is still difficult to perform in expected way. They also raised issues related with ability of hospitals department heads inability to planning regarding IPP, feedback problems, and problem identification gaps in facility level.

Another idea proclaimed with almost half of participants is that focus from Government as well as hospitals is not given for retention of professionals especially for those who took training. Giving routine training for professionals regarding IPP is good but there must be way to monitor their daily activity and skill sharing should be there because another alarming problem according to discussants is professional turnover they repeatedly stated there is no mechanism to uphold

skilled professionals. Some of participants try to show gaps on teaching institutions by addressing professionals newly recruited from universities are not equipped with necessary skill for IPP.

One head nurse stated that “we have large number of turnover of professionals in our hospital. We lose majority of nurses within one year time and there is difficulty of getting long term benefit of trained health professionals that made things difficult”

Other physician from another hospital said that “With the recognition of major problems related to staffing, support from the highest levels of leadership and NGO is needed to implement policies and strategies that incentivize healthcare worker retention and recruitment. Hospital leadership must also prioritize the allocation of resources to rapidly build norms and infection control skills for incoming healthcare workers. Resistances to perform routine infection prevention practices comes from not only governmental and institutional factors but more concern should be given to professionals personal behavior”

Generally factors raised by FGD participants as barriers to compliant with infection prevention practice among HPs includes high professionals turnover, heavy patient load and perceived understaffing, frustration with follow up from hospitals, and negligence of health professionals.

Government commitment to hospitals infection prevention, frequency and decentralized trainings on infection prevention, staff knowledge about infection prevention, support from NGOs raised as facilitators for comply with infection prevention practice by participants.

Chapter Six: - Discussion

For effective infection prevention practice, one of the major components is addressing the enabling environment appropriately. Underutilization of the skills such as hand hygiene practice, the use of personal protective equipment, safe use and disposal of sharps and hospital environment hygiene practice have a measurable effect on the hospital infection prevention practice.

In this study general knowledge of health professionals towards infection prevention was assessed and from total enrolled health professionals 71.6% were knowledgeable and this finding is lower than related studies in Ethiopia 87.7%, 84.2% studies done at Debra Markos and Bahir Dar respectively [5,24] but higher than many studies done at different parts of Ethiopia 63.9, 53.7%,55.4% [15,31,35]. This difference might be due to time and implementation of Ethiopian hospitals reform.

In this study, (84.1%) of health professionals were practicing hand hygiene before starting the procedure and contact with bodily fluids, and 38.4% were washing their hand after completing the procedure. But by our observational outcome shows that 77.5% of participants were hand hygiene practice after completing the procedure and only about 18.7% of HPs were practicing hand hygiene before starting any procedure possible justification could be health professionals have knowledge on hand hygiene but there is limitation on behavioral change that is already mentioned as shortcoming of health professionals during procedures by FGD participants. This finding is different to the study done in Bahirdar city administration health institutions which shows 82.5% HPs were hand hygiene practice after completing the procedure and 52.8% participants were hand hygiene practices before starting any procedure [18]. This might be due to unavailability of water sources in study hospitals as seen in our observation finding only 32% of working rooms have water source and negligence from professionals. The overall hand hygiene practice in this study were 69.8%. This is similar with hand hygiene practice of study done in Bahirdar city administration (69.0%) [18] but it is higher than study conducted at Amhara region which shows overall hand hygiene practice were 31.6% [32]. This might be due to better opportunity to training than the previous time and starting of hospitals reform programs in our studied facilities.

In this study, the majority of respondents 91.6% and 81.3% was utilized glove and gown for any patients in working place respectively, this also confirmed by observational findings were all

observed participant's worn gown and 86.2% used glove. And 72% of participants were reported utilizing mask and eye protection for procedure likely to generate droplets/splash and only 20.7% worn covered shoe in working place. Utilization of gown and glove is similar with our observation finding but during observation only 10% health professionals utilizing mask and eye protection for procedure likely to generate droplets/splash.

Concerning sharp collection and segregation practices, this study found out 78.6% respondents used safety box/puncture proof container for needle/ sharp collection 13.8% use any available container and the rest 4.6% use dust bin covered by plastic but during observation this findings are not in place. Findings from observation showed that only 55% of used needle were collected in to safety box and around 35% collected in to local bin and the rest 15% left on injection preparation table this findings are discouraging according to FMOH Ethiopia which stated that all used needles should be collected in safety box[7] and much lower than findings from studies conducted at Addis Ababa, Bahirdar , and Trinidad Tobago showed that 94%,54% and 98% of health professionals discard used needles and sharps in to safety box/puncture proof container[20,22,34]. The possible justification might be due to shortage of safety box supply and negligence of health professionals as mentioned on qualitative (FGD participants).

This study found out 92.3%HPs were vaccinated for hepatitis B virus this is encouraging and the possible justification could be due to enhanced emphasis is given for IPC and better supply of IPC material from time to time.

In this study, the proportion of healthcare professionals who appear to be comply with infection prevention practice was 57.8% which was much higher than similar studies in Arsi, Addis Ababa and Gondar which shows 36.3%, 48.6% and 12% respectively [15,16,31]. This may be explained by the fact that the vast majority healthcare professionals in the study hospitals (74.9%) attended training on infection prevention practices and 71.6% health professionals were knowledgeable on infection prevention practices but its lower than study conducted at Addis Ababa which shows 66.1% of health professionals practice safely [33].The difference is might be due to methodological difference and facilities where studies are conducted since Addis Ababa is capital of the country Health professionals in the capital cities had better work experience and get the opportunities for various infection prevention trainings, the likelihood of having better prevention practice will be higher than Health professionals residing in the country-side.

This study also found out significant differences in the compliance towards infection prevention among health professionals who attended training on infection prevention than health professionals who are not attended the infection prevention training. The odds of compliance were likely to be three times higher in healthcare professionals who attended training on infection prevention practice this is similar with other studies[34,15].This could be due to the fact that updating the knowledge of the health professionals about infection prevention practices could have changed the way they act.

Another factor which was significantly associated with complies with infection prevention practice of health professionals is knowledge. This study found out differences in the reported complywith infection prevention practice among different healthcare professionals in different knowledge categories such as the odds of comply with infection prevention practice among knowledgeable likely to be 2.5 times higher than health professionals who were not knowledgeable categories this is in line with finding from study conducted at south East Ethiopia [14] As a result with improved knowledge, compliance can be also improved.

6.1. Limitation of the study

- The study was conducted only in four hospitals and did not include heath centers and private health institutions. So the findings of the research might not explain the situation found in all other institutions.
- Social desirability and hawthorn affects (special and stressful attention of respondents to the observation and the questionnaire of the knowledge and practice) health professionals, this may affect the findings from the study. The data collectors tried to minimize this effect by communicating the goal of the study with respondents.

CHAPTER SEVEN:-CONCLUSIONS AND RECOMMENDATIONS

7.1. CONCLUSION

Findings from this study shows that level of compliance vary across different components of infection prevention. There is encouraging performance of health professionals and hospitals in same of activities like majority of health professionals were vaccinated against hepatitis B virus, greater part of health professionals attended training on infection prevention practices consequently they are knowledgeable where as there is poor practice on sharp waste management, that result about one third professionals experienced needle stick injury at last one year.

In addition to these the study demonstrated that compliance towards infection prevention practice of health professionals could be influenced by some factors like training or orientation on infection prevention practice, professional turnover, negligence of professionals, IP supplies, heavy patient load, perceived understaffing and hospitals follow up.

7.2. RECOMMENDATION

Based on the findings of the study the following recommendations were made.

For FMoH.

- There should be well organized monitoring and reporting system regarding IPP.
- There should be adequate and sustainable supply chain.

For regional health bureau

- There should be intensive trainings on behavioral change of health professionals towards infection prevention practice.
- Adequate distribution of supply must be ensured.
- Effort should be exerted to retain trained and skillful professionals.

For Hospitals and health professionals

- The hospitals should developed clinical governance and quality improvement strategy and an operation plan that addresses the key components of infection prevention.
- Infection prevention should be one of priority area for core management of the hospitals this in turn facilitates planning and budgeting.
- The identified hazardous activities in hospitals create high chance of acquiring infections for Health professionals. The first task would be to change the mind set of Health professionals from service provision at the risk of their own lives to improved self-defense during normal routines activities. Awareness raising, information flow from the Health professionals need to be improved. On job as well as off job trainings should be facilitated.
- This study highlights the need to do everything possible to look for alternatives and available resource to tackle this expanded problem of safety box shortage. After having training at different level of hospital it is necessary to equip them adequate materials.
- Sharp Waste should be segregated and disposed per standard.
- There should be organized incidents registrations and reporting system at all departments of the hospital. Every health professionals should know what to do, how to do and when to do during infections or exposure to potential source are happened.

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Annexes

Questionnaire

Annex I: English version information sheet

Questionnaire Identification Number -----

My name is _____. I am working as data collector in the research Conducted by TesfalidetMarkos, who is conducting this research for the partial fulfillment of his Master's Degree in Health Service Management at Jimma University. We are trying to assess compliance with infection prevention practice among health professionals. We would like your honest opinion pertaining to the questions especially what you had experienced in the health institutions.

Name of advisors: Shimeles Ololo (MPH, Associate Professor), MulunehGetachew (MPH)

Name of the organization: Jimma University Faculty of Public Health and Department of Health Economics, Management and Policy

Name of the Sponsor Self.

Introduction: Information sheet and consent form is prepared for health professionals who are in hospital and volunteer to participate in research project; quantitative cross-sectional study was used to assess status of infection prevention practice.

Purpose: I am hopeful that this research was benefit all health professionals including health service managers and quality of care. I will provide research results to concerned body for intervention.

Procedure: To assess status of infection prevention practice in the health institutions you are invited to take part in this project. If you are willing to participate in this project, you need to understand and say, "Yes" on the agreement form. Then after, you was interviewed by the data collector. All your responses and the results obtained was kept confidential by using coding system whereby no one will have access to your response.

Risk/ Discomfort: By participating in this research project, you may feel that it has some discomfort especially on spending time about 30 minutes. We hope you will participate in the study for the sake of the Benefit of the research result. I am sure there is no risk in participating

in this research project. You will not be provided any incentive or payment to take part in this project.

Confidentiality: The information collect from this research project was kept confidential and information about you that was collected by this study was stored in a file, without your name, but a code number assigned to it. In addition, it will not be revealed to anyone except the principal investigator and was kept locked with key. Right to refuse or withdraw: You have full right to refuse from participating in this research. You can choose not to respond to some or all questions if you do not want to give your response. You have also the full right to withdraw from this study at any time you wish, without losing any of your right. If you have any question, you can ask at any time.

If you have additional questions about the study please contact

Tesfalidet Markos - principal investigator

Tel +250942501101

Email:-lidetlidet2@gmail.com

Annex II: English Version Consent Form

I understand all conditions stated above. I have understood that Participation in this study is entirely voluntarily. I have been told that my answers to the questions will not be given to anyone else and no reports of this study ever identify me in any way. Therefore, I am Ready and willing to participate in this study. If, respondent does not agree to be interviewed thanks her and go to the next respondent. If, respondent say “Yes” continue.

Checked by:

Supervisor Name _____ signature_____

Date____/____/____ E.C.

Time Interview Started: Hour: _____ Minute: _____

Questionnaire No_____

Time Interview Ended: Hour: _____ Minute: _____

Name of interviewer _____

Date ____/____/____ E.C. signature_____

Q/No	ITEM/QUESTION	RESPONSE OPTION	CODE	Remark
	Part one:- General Information			
101	Sex	Male Female	1 2	
102	Age	(.....)years		
103	Marital status	Single Married Divorced Widowed	1 2 3 4	
104	Profession	Doctor Nurse Laboratory Midwife	1 2 3 4 5	
105	Year of service	(.....) years		
106	Hours worked per week	Less than 40 40 hours Above 40 hours Other specify.....	1 2 3 99	
107	Educational level	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	If yes go to 203
202	Give reason if your response to Q 201 is no	Not aware Not available in the facility High cost Other specify.....	1 2 3 99	
203	Does the facility have guideline for infection prevention	Yes No	1 2	

204	Are you familiar with the guide line covering infection prevention	Yes No	1 2	
205	Have you ever participated in any training program about infection prevention	Yes No	1 2	
Parte three General knowledge on infection prevention				
301	Have you heard about infection prevention principles	Yes No	1 2	
302	Gloves cannot provide complete protection against transmission of infections	Yes No	1 2	
303	Washing hands with soap or use of an alcohol based antiseptic decreases the risk of transmission of healthcare acquired infections	Yes No	1 2	
304	Use of an alcohol based antiseptic for hand hygiene is as effective as soap and water if hands are not visibly dirty	Yes No	1 2	
305	Gloves should be worn if blood or body fluid exposure is anticipated	Yes No	1 2	
306	Hand washing is necessary before procedures are performed	Yes No	1 2	
307	Tuberculosis (TB) is carried in airborne particles that are generated from patients with active pulmonary tuberculosis	Yes No	1 2	
308	There is no need to change gloves between patients as long as there is no visible contamination	Yes No	1 2	
309	Do you know how to prepare 0.5% chlorine solution?	Yes No	1 2	
310	Safety box should be closed/sealed when three quarters filled	Yes No	1 2	

	Part four:- hand hygiene			
401	According to standards precautions , hand washing is performed	-Before any direct contact with patients - Between patients' contact -Immediately after removing gloves -After touching body fluids -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 clean your hands at work	Soap and water Alcohol based hand rub Other specify_____	1 2 99	
404	When do you use alcohol based hand rub to clean your hand?	Not visibly contaminated	1	
		Visibly contaminated	2	
		Other specify_____	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 body fluids	Yes No	1 2	
408	After touching the patient	Yes No	1 2	
409	Immediately after removing gloves	Yes No	1 2	
410	After touching a patient's surrounding	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	1	
		-It is a waste of time and it	2	

		increases patient waiting time - Not all patient contact is infectious -It is costly -other specify.....	3 4 99	
Part five :- personal protective equipments				
501	Do you use personal protective equipment	Yes No	1 2	If no goto 501
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 transmission of organism.	Strongly agree Agree Don't know Disagree Strongly disagree	1 2 3 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 gloves 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	
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	

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	
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	
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	
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 soiled linen is washed by	Using laundry machine Using hand Other specify.....	1 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 waste management			
601	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	
602	Are there any sharp/needle collection box?	Yes No Not available	1 2 3	
603	If yes type of sharp collection material	Safety box/card box Plastic pail with lid	1 2	

		Plastic pail without lid	3	
		Other specify.....	99	
604	What goes in to safety box?	-Disposable syringe with needles	1	
		-lancets	2	
		-Other contaminated sharps	3	
		-empty vial	4	
		-cotton pads	5	
		-dressing materials	6	
		-bags or extension tubes	7	
		-latex gloves	8	
		-other	99	

	Part seven safe injection			
701	What do you think the main reasons for reuse of syringe and needles?	no reuse of syringe & needle	1	
		Shortage of supply	2	
		Lack of knowledge	3	
		Carelessness	4	
		To reduce the cost of treatment	5	
		Other specify_____	99	
702	After giving injection or drawing blood from the patient	I do not recap used needles	1	
		I remove needles from the disposal syringe	2	
		I bend needles by hand to prevent injury to other health worker	3	
		I recap used needles	4	
		Other specify.....	99	
703	When I discard used needles and sharps, I use	any available container	1	
		a dust bin covered with plastic	2	
		a closed dust bin	3	
		a puncture proof container/safety box	4	
704	Have you had needle stick or sharp injury in the last one year?	Yes	1	
		No	2	
		Don't Know	3	
705	If yes how did you sustain the injury?	-During recapping	1	
		-By sudden movement of the patient	2	
		-During sharp collection	3	
		-Other specify_____	99	
706	Is there any prophylaxis to HIV after exposed to injury by needle/ sharp?	Yes	1	
		No	2	
		Don't Know	3	
707	Do you take post exposure prophylaxis (PEP) after injury?	Yes	1	
		No	2	
708	Is there responsible person for conducting incidence activities in your facility?	Yes	1	
		No	2	
		don't know	3	

s.No	Practice item	Yes	No	Remark
1	Do you apply antiseptic hand rub to clean hands?			
2	Did you practice high-level disinfection where sterilization is not applicable?			
3	Do you use all Personal Protective Equipment's (PPE) to prevent the risk of acquiring and/or transmitting infection?			
4	Did you segregate healthcare wastes?			
5	Do you incinerate or bury used sharp materials			
6	Do you incinerate or bury used sharp Materials	Every 24 hours		
		Every 2 days		
		Immediately when it is soiled		
		I don't know		
7	For how long do you soak reusable medical instruments in chlorine solution?	10 Min		
		1 hour		
		24 hours		
		24 hour		
		5 min		
8	How often do you use glove (both hands)	Always		
		Sometimes		
		Never		
9	Do you wear the necessary personal protective equipment (PPE) such as gloves, apron, goggles and mask, if splashes or spills of any body fluids are likely?	Always		
		Sometimes		
		Never		
10	Where do you usually put sharp Disposal boxes?	In high traffic area		
		At corridor		
		Any where		
		Hand reach area		

መጠየቅ

የመረጃ ገለጻ ቅፅ

ሰላምታ

ስሜ ----- እባላለሁ

ይህ ዱራሜ ፣ ሺሽች ፣ ዶዮገና ፣ ሙዱላ፣ ሆስፒታሎች ላይ ስለ ብክለት መከላከል ስራ በህክምና ባለሙያዎች ላይ ለሚደረገው ጥናት መረጃ ለመስጠት ነው።

የዚህ ጥናት አላማ ብክለት መከላከል ስራ በህክምና ባለሙያዎች ተያያዥ ጉዳዮች ላይ መረጃ ለመስጠት ነው። ይህ ጥናት የሚመለከተው አካል የአገልግሎት ጥራት ለማሻሻል ለሚያደርጉት ጥረት እንዲሁም ውሳኔ ሰጪዎች ጥቅም ይኖረዋል።

ለዚህም በአሁኑ ጊዜ ያለው መረጃ በሆስፒታሎች ብክለት መከላከል ስራዎች ውስጥ በመሰራት ካሉት ባለሙያዎች መጠየቅ በማድረግ ይሰበሰባል። የሚጠየቁት ባለሙያዎች በክፍል ወይም ሙሉ በሙሉ ላለመሳተፍ መብት ያላቸውን ሲሆን የመረጃው ሚስጥራዊነት የሚጠበቅ ይሆናል። ለዚህም ተጠያቂስም መጻፍ አያስፈልግም። በጥናቱ ላይ መሳተፍ ምንም ጉዳት ወይም ስጋት አያስከትልም።

የፍቃደኝነት መጠየቂያ ቅጽ

ስለዚህ በዚህ ጥናት ላይ እንዲሳተፉ በትህትና እጠይቃለሁ። ጥናቱን ጊዜ ወስደው መረዳት እና ለመሳተፍ ወይም ላለመሳተፍ መወሰን የራስዎ መብት ነው። አንዳንድ ጥያቄ መመለስ ካልፈለጉ የማይገደዱ ሲሆን መጠይቁን በፈለጉ ጊዜ ማቆም ይችላሉ። ሆኖም የእርስዎ ትብብርናት ክክለኛ መልስ ቢሰጡም ምስጋናዬ ከፍተኛ ይኖራል። መጠየቁ 30-40 ደቂቃ ሊወስድ ይችላል።

ስለጥናቱ የበለጠ ለማወቅ ከፈለጉ የጥናቱ ዋና ተጠሪ ተስፋልደት ማርቆስ አደሩ በዚህ አድራሻ ማግኘት ይችላሉ። ስልክ 0942-50-11-01 ኢሜይል lidetlidet2@gmail.com

የፍቃደኝነት ቅጽ	
ጠያቂ፡- የፍቃደኝነት ቅጹን ለተጠያቂው እባክዎ ይሰጡና ያብራሩ። ከላይ የተገለጸውን መረጃ በመረዳት በጥናቱ ላይ ለመሳተፍ ፍቃደኛነዎት?	
አዎ ከሆነ ይቀጥሉ	<input type="checkbox"/>
አይደለም ከሆነ ያቁሙ	<input type="checkbox"/>
የጠያቂው ስም	-----ፊርማ ----- ቀን -----
የሱፐርቫይዘር ስም	-----ፊርማ ----- ቀን -----

መለያ		መልስ	የመልስመለያ
101	ጾታ	ወንድ ሴት	1 2
102	ዕድሜ	----- ዓመት	
103	የጋብቻሁኔ	ያገባ ያላገባ የተፋታ የሞተበት	1 2 3 4
104	የሙያአይነት	ዶ/ር ነርስ ላብራቶሪ አዋላጅ	1 2 3 4
105	የስራልምድብዓመት	-----ዓመት	
106	በሳምንት የምትሰራበት ሰዓት	40 በታች 40 ከ40 በላይ	1 2 3
107	የትምህርት ደረጃ	ዲ.ፕሎማ የመጀመሪያ ዲግሪ ሁለተኛ ዲግሪና ከዚያ በላይ	1 2 3
108	የጉበት በሽታ መከላከያ ክትባት ወስደኋል/ሽ	አዎ አይደለም	1 2
109	ካል ወሰዱ ለምን?	እውቀቱ የለኝም ክትባቱ የለም ውድስ ለሆነ ሌላካለ	1 2 3 4
110	ተቋሙ የብክለት መከላከያ ማጣቀሻ ማኗል አለው?	አዎ አይደለም	1 2
111	ከማጣቀሻው ማኗል ጋር ተላምደህል/ሽ	አዎ አይደለም	1 2
112	ስለ ብክለት መከላከያ ስልጠና ወሰደህ/ሽ ታውቃለህ/ሽ	አዎ አይደለም	1 2
ክፍል ሦስት የጠቅላላ እውቀት ጥያቄዎች			
301	ስለ ብክለት መከላከያ ስልጠና ተሳታፊ ነህ/ሽ?	አዎ አይደለም	1 2
302	የእጅግ ጉዳት ብክለትን ሙሉ በሙሉ ይከላከላል	አዎ አይደለም	1 2
303	እጅን በውሃና በሳሙና ወይም ለእጅግ ጉዳት ብክለት ዘጋጀው በአልኮል ወይም ሌሎች ማጣቀሻዎች በሽታ ንጥረት ላይ ይቀንሳል	አዎ አይደለም	1 2
304	እጅን በውሃና በሳሙና ወይም ለእጅግ ጉዳት ብክለት ዘጋጀው በአልኮል ወይም ሌሎች ማጣቀሻዎች እጅ በሚታይ ቆሻሻ ካልቆሸሸ በቀር ያውሳው	አዎ አይደለም	1 2
305	የእጅግ ጉዳት የሚያስፈልገው የደም ክኪሲኖርብ ታይንት	አዎ አይደለም	1 2
306	ስራ ከመስራት በፊት እጅን ማጽዳት ተገቢ ነው	አዎ አይደለም	1 2
307	የቲቢ በሽታ አምጭ ህዋሳት ከቲቢ በሽታ ምንም ዓይነት ማወጣት ገደብ አለው/ሽ	አዎ አይደለም	1 2
308	የሚታይ ቆሻሻ ካልተጠበቀ በሁለት ታካሚዎች መሀል የእጅግ ጉዳት መቀየር አያስፈልግም	አዎ አይደለም	1 2
309	ከሎገን 0.5% ውህድ እንዴት እንደሚዘጋጅ ታውቃለህ/ሽ	አዎ	1

		አይደለም	2
		ታማሚዎቹምጡብቁትንሰዐትያበዘዋ የሁሉምታማምዎችንከኪበሽታአምጨአ አይደለም ወደኑወልል 3 4 99	
ክፍልአምስት:- እራስንመጠበቅያመሳርያ ስለመጠቀም			

310	ሴፍቴቦክስመዘጋትአለበት 3/4 ኛውሲሞላነው	አዎ አይደለም	1 2
ክፍልአራትየእጅንጽህና			
401	በእስታንዳርድፕርኬሽንመሠረትእጅማጽዳትየሚያስፈልገው	-ታካሚንከመንካትበፊር -በ 2ታካሚዎችመሀል -ጓንትካወለቁበኃላ -የሰውነትፈሳሽከነኩበኃላ -ከስራበፊትናበኃላ -ሌላካለ	1 2 3 4 5 6
402	ስራላይእጅህን/ሽታጸዳለህ/ሽ?	አዎ አይደለም	1 2
403	እጅህን/ሽለማጽዳትየምትጠቀመው/ሚምንድነው?	ውሃናሳሙና በአልኮልየተሰራየእጅማጽጃ ሌላካለ-----	1 2 3
404	በአልኮልየተሰራውንየእጅማጽጃየምትጠቀመው/ሚመኙነው?	እጅበሚታይቆሻሻሲበከል በሚታይቆሻሻሲበከል ሌላካለ-----	1 2 3
405	እጅህን/ሽንመቼመቼታጸዳለህ/ሽ?		
406	ስራከመጀመሪያበፊት	አዎ አይደለም	1 2
407	ስራከጨረሽኩበኃላናየሰውነትፈሳሽሲነካካኝ	አዎ አይደለም	1 2
408	ታካሚከነካውበኃላ	አዎ አይደለም	1 2
409	ጓንትካወለቁኩበኃላ	አዎ አይደለም	1 2
410	የታካሚአከባቢከነካውበኃላ	አዎ አይደለም	1 2
411	እጅህን/ሽንበውሃናሳሙናወይምአልኮልበትየእጅማጽጃምታጸዳው/ጂው	ሁልጊዜ አልፎአልፎ አንዳንዴ በጭራሽ	1 2 3 4
412	መልስህ 2:3:4 ከሆነለምን?	ውሃናሳሙናወይምበአልኮልየተዘ ጋጀየእጅማጽጃስለማይኖር የሰዓት-በከነትሰለሆነ የታካሚንሰዓትመግደልሰለሆነ	1 2 3 4

501	እራስንመከላከያመሳርያይተቀማሉ	አዎ አይደለም	1 2
502	ለጥያቄ ቁ 501 አዎከሆነምለሽዎየትኛውነነውሚጠከሙት	አፕሮን ጉአንት ሽፍንጫማ የአይንመከላከያ ማስክ ጋዎን ሌሎችን....	1 2 3 4 5 6 7 8 99
503	ለጥያቄ ቁ 501 አዎከሆነምለሽዎ:- ለምን	ከስራጋርይከብዳል ሁሌአስፈላጊአይደለም አይመችም አይገኝም በሌላ..	1 2 3 4 99
504	ህክሚናበምሰጥበትጊዜጉአንትማድራግጥቃቅንትዋሳትእንዳይተላልፉመከላከያመንገድነው	በጣምአስማማለው አስማማለው እኔአንጃ አልሰማማም በጭራሽአልሰማማም	1 2 3 4 5
505	መቼነውጉአንትምትጠቀመው	ለሁሉምሰዎችእንደአስፈላጊነት HIV በደማቸውወሰጥይኖርባችዋለተብሎለ ምገምቱሰዎችብቻ HIV በደማቸውወሰጥላልባቸውሰዎችብቻ ጉአንትእንድትጠቀምለምፈልጉ ሌላያልተተቀሰ....	1 2 3 4 99
506	ከሰውነትለሚዎጡፈሳሾችንኪክ፣ ቀለልላለቆዳንኪኪእናለውሰጥሰውንትንኪኪጉንትምተቀመው	ሁሌ ብዙጊዜ አንዳንዴ በጭራሽአሊጠቀምም	1 2 3 4
507	ለጥቁቁጥር 506 ሚላሽዎ 2፣3 ወይም 4 ከሆነምሳዎምከኒያተዎንይሰጡ	አቅሙስለሌለን ለስራስለማዬመች ታማምዎቹእንድፈሩልደርጋቸውሰለምች ል በሌላምከንት.....	1 2 3 99
508	ደምወይምየሰውነትፈሳሽልራጭበምችልባቸውፕሮሲጀሮችጋዎን/ፕላስቲክአፕሮንምለብሰው	ሁሌ ብዙ ጊዜ አንዳንዴ በጭራሽ	1 2 3 4

50 9	ለጥያቄቁጥር 508 ምሽቅ 2፡3 ወይም 4 ከሆነምከኒያትዎንይስጡ	በአቅርቦትአጥረት ተለብሰለስራሰለማይመች ታማምዎቹአንድፈሩልደርጋቸውስለ ምችል በሌላምክንት.....	1 2 3 9 9
51 0	ደምወይምየሰውነትፈሳሽልንጠባጠብበምችልባቸው፣ፕሮሲዉጀሮችለይያአፍመሸፈ ኛ(ማስክ) እናየአይንምጠቅያማደርገዉ	ሁሌ ብዙ ጊዜ አንዳንዴ በጭራሽ	1 2 3 4
51 1	ለጥያቄቁጥር 510 ምሽቅ 2፡3 ወይም 4 ከሆነምከኒያትዎንይስጡ	በአቅርቦትአጥረት ተለብሰለስራሰለማይመች ታማምዎቹአንድፈሩልደርጋቸውስለ ምችል በሌላምክንት.....	1 2 3 9 9
51 2	የትኛዉንየሰውነትመቆረጥናመጨጫርዉሃበማያስገባቁሰልማሽግያማሽገዉ	ሁሌ ብዙ ጊዜ አንዳንዴ በጭራሽ	1 2 3 4
51 3	ለጥያቄቁጥር 512 ምሽቅ 2፡3 ወይም 4 ከሆነምከኒያትዎንይስጡ	በአቅርቦትአጥረት ተለብሰለስራሰለማይመች ታማምዎቹአንድፈሩልደርጋቸውስለ ምችል በሌላምክንት.....	1 2 3 9 9
51 4	በስራብታዩሽፍንጫማማደርገዉ	ሁሌ ብዙ ጊዜ አንዳንዴ በጭራሽ	1 2 3 4
51 5	ለጥያቄቁጥር 514 ምሽቅ 2፡3 ወይም 4 ከሆነምከኒያትዎንይስጡ	በአቅርቦትአጥረት ተለብሰለስራሰለማይመች ታማምዎቹአንድፈሩልደርጋቸውስለ ምችል በሌላምክንት.....	1 2 3 9 9
51 6		ማጡብያማሺንበመተቀም በሰውእጅ	1 2

		ሌላ.....	9	
			9	
51	ለጥያቄቁጥር 514 ምለዎ 2 ወይም 3 ከሆነምከኒያትምንድነው	ማጠብያማሸንየለም የገንዘብአቅምየለንም	1	
7			2	

ክፍልሰድስት:- ተግባራዊቆሻሻሎች				
601	ስለታመኔቃዎችንወይምመርፌዎችንየትነውምጥሉት	በክፍትባልዲ ከሌላቆሻሻሎችንድላይ ሌላ.....	1 2 3 4 99	
602	የስለታመኔቃዎችንወይምመርፌመጣያ/ማጠራቀምያክለ	አለ የለም	1 2 3	
603	አለከሆነመልስዎምንዳይነት የላስቲክባለዲክሊድጋር የላስቲክባለዲያለሊድ ሌላ.....	1 2 3 99	
604	ምንድነውወደሴፍቲቦክስሚጣለው	ስርመጀላናመርፌ ላንሴት ሌሎችየተበከሉስለታመሳርዎች ባዶብልቃጦች ጥጥ የቁስልማሸግያመሳርያዎች ጉዳዮች ሌላ.....	1 2 3 4 5 6 7 8 99	

ክፍልሰባት:- ጤናማመርፌአዎጋግ				
701	መርፌናስርንጅድጋም /በአንድከአንድበላይጊዜምጠቀሙበትምከንትለምንይመስል ዎታለ	ከአንድበላይጊዜጥቅምላይአይወሉም የአቅርቦትግርስላለ የእውቀትማነስሰላለ በግድየለሽነት የህክምናውንዎጪለመከነስ ሌላ.....	1 2 3 4 5 99	
702	በመርፌመድሃኒትከዎጉብኻላወይምደምከበሽተኛውከቀዱበኻ ላ	መርፌውንመልሼአልከድነውም መርፌውንከስሪንጁአለየዋለው ሌሎችሰዎችንእንዳይጎዳየመርፌውንጫፍበእጄአጥፊ ዋለው የተጠቀምኩአቸውንምመርፌዎችመልሼአከድናለው ሌላ.....	1 2 3 4 99	
703	የተጠቀምኩባቸውን መርፌዎችንና ስለታም መሳርዎችን ስጥል	በማንኛውም በተገኛው ማጠራቀምያ	1 2 3 4	
704	በባለፈውአንድአመትመርፌዎችንየህወይምስለታምነገርቆርጦዎ ትያውቃል	አዎ አይደለም	1	

		እኔ እንኛ	2 3	
705	አዎከሆነም ላሽዎምን ስደርጉኑ ወይ	መልሰው ስከድኑ ታማሚ ወይ ያድዱ ተንቀሳቅሶ ስለ ታምነገሮች ከሰበሰቡ ሌላ.....	1 2 3 99	
706	በስለ ታም እቃ ወይም በመረጫ ከተወጡ ሻላዎቹ HIV መከላከያ ወስደዋል	አዎ አይደለም እኔ እንኛ	1 2 3	
707 PEP ወስደዋል	አዎ አይደለም	1 2	
708	አዎ አይደለም እኔ እንኛ	1 2 3	

ተ. ቁ	ድርግቶች	አ ዎ	አይደለም	ምርመራ
1				
2			
3	ተላላፊ በሽታዎችን ለመከላከል እራስን መከላከያ መሳርያ ይተቀማሉ			
4	ከጤና ገተቆጠቆሻሻዎችን ለይተው ያስቀምጡ ነበረ			
5	አገልግሎት ለይደዋሉ ስለ ታምነገሮችን ቀብራሉ ወይም ያቃጥላሉ			
6	አገልግሎት ለይደዋሉ ስለ ታምነገሮችን ቀብራሉ ወይም ያቃጥላሉ	በየ 24 ሰዓት		
		በየ 2 ቀን		
		ወድያውኑ		
		አላውቅም		
7	ድጋሚ ምግብ ላይ እቃዎችን ለምን ህልገቤ በክሎራይድ ወይም ህድድ ስጥዘ ፍዝፈዴ ያቆሉ	ለ 10 ደቂቃ		
		ለ 1 ሰዓት		
		ለ 24 ሰዓታት		
		5 ደቂቃ		
8		ሁሌ		
		አንዳንዴ		
		በጭራሽ		
9	ጠቃሚ የሆኑ እራስን መከላከያ መሳርያዎች (አፕሮፕራት የአይን መከላከያ ማስክ/የአፍ መሽፈኛ) ይጠቀማሉ	ሁሌ		
		አንዳንዴ		
		በጭራሽ		
10	የስለ ታም እቃዎች ቆሻሻ መጣ ያሳጥን የትቦታ ያስቀምጣሉ	ሰው በምስዛበት		
		ኮሪደር ላይ		
		የትምቦታ		
		በቅርብ በምደርሱበት ትቦታ		

Focus Group Discussion Guideline

Thank you for agreeing to participate. We are very interested to hear your valuable opinion on how the Hospital operates IPC.

- The purpose of this study is to assess how health professionals compliant towards infection prevention practices. We hope to learn things that the hospital can use to improve working conditions and other factors that would improve health worker practice towards infection prevention .The information you give us is completely confidential, and we will not associate your name with anything you say in the focus group. We would like to tape the focus groups so that we can make sure to capture the thoughts, opinions, and ideas we hear from the group. No names was attached to the focus groups and the tapes was destroyed as soon as they are transcribed. You may refuse to answer any question or withdraw from the study at any time. We understand how important it is that this information is kept private and confidential. If you have any questions now or after you

have completed the questionnaire, you can always contact a study team member like me, or you can call names and phone numbers are on this form. Please check the boxes on page 2 and sign to show you agree to participate in this focus group.

Introduction:

1. Welcome

My name isand my friend name is (note taker).....

Ask the group if anyone has participated in a focus group before. Explain that focus groups are being used more and more often in health and human services research.

- We learn from you (positive and negative)
- Not trying to achieve consensus, we're gathering information
- No virtue in long lists: we're looking for priorities
- In this study, we are doing both questionnaires and focus group discussions. The reason for using both of these tools is that we can get more in-depth information from a smaller group of people in focus groups. This allows us to understand the context behind the answers given in the written survey and helps us explore topics in more detail than we can do in a written survey.

Logistics

- Focus group will last about average of 1-2 hour
- Feel free to move around
- Where is the bathroom? Exit?
- Help yourself to refreshments

2 Ground Rules

Ask the group to suggest some ground rules. After they brainstorm some, make sure the following are on the list.

- Everyone should participate.
- Information provided in the focus group must be kept confidential
- Stay with the group and please don't have side conversations
- Turn off cell phones if possible

- Have fun
2. Turn on Tape Recorder(smart phone)
 3. Ask the group if there are any questions before we get started, and address those questions.
 4. Introductions
 - Go around table: job here, where you were born
 - Discussion begins, make sure to give people time to think before answering the questions and don't move too quickly. Use the probes to make sure that all issues are addressed, but move on when you feel you are starting to hear repetitive information.

Questions:

1 Let's start the discussion by talking what are common standard precaution practices to prevent infection?

❖ Probes

- Hand hygiene
- PPE
- Safe injection
- Waste disposal
- Instrument processing
-

2 How are IPC activities in this Hospital regarding each of activities mentioned above?
(strategies, polices, rules, generally the system of Hospital in IPC)

- Good about IPC?
- Not good about IPC?

3 What are those contributing factors for both good and not good IPC practices?

4 What is your suggestion/comment to overcome those short comes in IPC practices in the hospital?

That concludes our focus group. Thank you so much for coming and sharing your thoughts and opinions with us.

Materials and supplies for focus groups

- Sign-in sheet
- Consent forms (one copy for participants, one copy for the team)
- Pads & Pencils for each participant
- Focus Group Discussion Guide for Facilitator

- 1 recording device
- Batteries for recording device
- Notebook for note-taking
- Refreshments

Observation checklist

Instruction: The observation check list has 8 pages and it contains 40 questions. At the first page of the module will find the form for informed consent. You are expected to check that all the pages & questions are present, and wear your gown or uniform. Take the informed consent form each interviewee before you precede the observation and the interview. The observation checklist should be filled before commencing interview it may take in average 40 minutes. You are expected to circle the answers against the code numbers or write on the space provided. At the end check and/or crosscheck for completeness, consistency and reliable responses.

Complete the time and approve with your usual signature.

INFORMED CONSENT

1. Name of Hospital _____ department -----
2. Date _____
3. Time started _____

Hallo! Good morning?

My name is Sr./Ato ----- and my friend is Sr./ Ato-----.

We are a research team member of Jimma University, Department of Health Policy and Management, Faculty of Public Health. Today we are here to collect data on the assessment of health professionals compliant towards infection prevention practice and its associated factors. The objective of this questionnaire is to assess Infection prevention practices and associated factors among health professionals in Governmental Hospitals, KT Zone, SNNPregionalState. We would like to assure you that the study is confidential. We will not keep a record of your name and address. You have a right to stop the interview at any time, or to skip any question that you do not want to answer. Your correct answer to the questions can make the study achieve the goals. Therefore, you are kindly requested to respond genuinely and voluntary with patience. The interview may take about 40 minutes. Do you have any question? Are you willing to participate in the interview?

- Yes, Go to the next page
- No, Thank them and interrupt the interview
- Signature of the consenting interviewer-----

Data collector's Name: 1. ----- Signature -----

2. ----- Signature -----

Supervisor's name----- Signature -----

Facility Observation Checklist :-Circle your chose from Q801-Q808 and enter your chose code number in each department from Q801-end

		OPTION		skip TO	1	2	3	4	5	6	7
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	yes no	1 2								

	with training in infection control?											
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 -	1									

817	How was the condition of the S	-Over filled -Torn and	1																
		Protected spring water	2																
		- Protected well water	3																
		- Stream	4																
		- Other specify _	99																
810	During your observation is there running water in there room?	Yes No	1 2																
		through the hole	2																
		-Empty or few	3																
811	Is there soap available at the station?	dirty Yes No	1 4																
		syringed and needles	2																
812	Are paper towels available to dry hands?	- Sharps Yes No	5 1 2																
		mixed with other waste	2																
		-Other()	99																
813	Is there alcohol swab in the room?	Yes	1																
818	Is there a written material or picture for risk	Yes No Not available	1 2 3																
814	communication in the department/ based hand rub in the room?	-Yes -No Not available	1 2 3																
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																
821	What goes in to the safety box?	-Disposable syringe with needles	1																

		-lancets	2								
		-contaminated sharps	3								
		-Empty vials	4								
		-Cotton pad	5								
		-Dressing material	6								
		- Latex glove	7								
		-other plastic materials or waste products	8								
			99								
822	Where do you dispose sharp materials or used needles?	-Open pail	1								
		-In sharp and liquid proof container without disassembling	2								
		-In sharp and liquid proof container after disassembling	3								
		-Mixed with other wastes/ rubbish	4								
		-Other specify	99								
823	The facility maintains a log of needle sticks, sharps injuries, and other employee exposure events	Yes	1								
		No	2								

Key

1 stands for Emergency room
2 stand for Outpatient
3 stand for Laboratory

4 stands for Ward
5 stand for Delivery
6 stands for MCH

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.			
		Participant 1	Participant 2	Participant 3	Participant 4
	Observe HH in these moments				
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	After touching a patient's surroundings				

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 we're 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?				
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?				