ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCE

SCHOOL OF PUBLIC HEALTH

COMPLIANCE OF HEALTH CARE PROFFESIONALS WITH HAND HYGIENE PRACTICE AND ITS ASSOCIATED FACTORS AMONG GENERAL HOSPITAL IN ADDIS ABABA, ETHIOPIA

BY

ZIYAD AHMED (BSC)

A RESEARCH THESIS TO BE SUBMITTED TO THE SCHOOL OF PUBLIC HEALTH OF ADDIS ABABA UNIVERSITY ON PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTERS OF PUBLIC HEALTH

ADVISOR

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LIST OF ABRIVIATION AND ACRONYMS

AAU	Addis Ababa University
ABHR	Alcohol Based Hand Rub
AOR	Adjusted Odd Ratio
CDC	Center for Disease Control and Prevention
GGH	Governmental General Hospital
HC	Health Center
HCAI	Health Care Acquired Infection
HCP	Health Care Professional
HCW	Heath Care Worker
HH	Hand Hygiene
HHC	Hand Hygiene Compliance
ICU	Intensive Care Unite
IPC	Infection Prevention Committee
IQR	Inter Quartile Range
OG	Obstetrics and Gynecology
PGH	Private General Hospital
SPSS	Statistical Package for Social Science
SRS	Simple Random Sampling
UP	Universal Precaution
WHO	World Health Organization

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ABSTRACT

Introduction: Globally, a significant proportion of healthcare providers and patients acquire nosocomial infections. Failure to perform appropriate hand hygiene is considered to be the leading cause of health care acquired infection worldwide. In Addis Ababa, different report show that health care worker hand hygiene compliance was low in both public and private health care institution even though there were few detail studies done in this area

Objectives: To describe compliance of health care professionals with hand hygiene practice and its associated factors among general hospital in Addis Ababa, Ethiopia, July 2017.

Methodology: An institutional based cross-sectional study was conducted among general hospitals in Addis Ababa. Simple random sampling system was used to select participants. Seven hundred eight health care professionals were included in the study. Data was collected by 4 data collectors and 1 supervisor using pre-tested questionnaire after appropriate training. The data was entered into EPI data version 3.1, and then exported to SPSS version 22 for data management and analysis. Variable with p value <0.25 during the bivariate analysis were included in the multivariable logistic regression analysis.

Result: A total of708 health care professional were included in the study and 651 of them filled self-administered questions with response rate of 91.9%. The overall good hand hygiene practice of health care professionals were 50.4%. Hand hygiene practice was reported high when health care professional feel or look dirty, and low before entering isolated room. The odds of hand hygiene practice of those master and above holders (AOR (95% of CI)) = 0.46 (0.258, 0.839) and those with first degree holders (AOR (95% of CI)) = 0.43 (0.230, 0.819) were less than diploma holders. Those with Good attitude toward hand hygiene (AOR (95% of CI) = 1.61 (1.087, 2.381), those who know functionality of infection prevention committee (AOR [95%CI]) =1.57(1.035, 2.376), those who said sink is functional (AOR (95% of CI)) = 2.26 (1.070, 4.792), those who reported running water is available (AOR (95% of CI)) = 1.86 (1.011, 3.432), those who reported hand hygiene guide line is available in the working area (AOR (95% of CI)) = 1.66 (1.134, 2.427) were more likely to practice hand hygiene compared with counterparts .

Conclusions and recommendations: According to this study good hand hygiene practice is low. This show that patients and health care workers are at high risk of acquiring nosocomial infection .So government and management of the hospital must emphasis on patient safety.

Key words: compliance, hand hygiene practice, health care professionals

1. INTRODUCTION

1.1 Background

Health care-associated infections (HCAIs) are infections that occur during health care interventions in any health care setting where care is delivered (1).It pose a real and serious threat to both the patients and health care workers. Hand hygiene is a general term that applies to either hand washing with plain soap and water, antiseptic soap and water, antiseptic hand rub or surgical hand antisepsis (2). Common pathogens can easily transmit through health care workers' hands, equipment, supplies and unhygienic practices (3; 4).

In order to overcome this problem standard precautions were developed which represent the minimum infection prevention and control measures that apply to all patient care, regardless of suspected or confirmed infection status of the patient, in any setting where healthcare is delivered. These evidence-based practices are designed to protect healthcare personnel and prevent the spread of infections among patients (5).

Hand hygiene is one of standard precaution which is considered to be the primary measure necessary for reducing HCAI. It contributes significantly to keeping patients safe. It is a simple, low-cost action to prevent the spread of all microbes that cause HCAI. While hand hygiene is not the only measure to counter HCAI, compliance with it alone can dramatically enhance patient safety, because there is much scientific evidence showing that microbes causing HCAI are most frequently spread between patients on the hands of health-care workers (6; 7).

Different studies show that compliance of Health care professionals to hand hygiene practice can prevent high percentage of HCAI risks with readily available, relatively inexpensive and simple strategies (6; 7; 8; 4) . Hand hygiene is now recognized as a key for keeping quality indicator in all health care institution were health care services is delivered (6). Compliance of health care worker with hand hygiene practice is one of the major health care quality assurance strategies that need emphasis (6).

1.2 Statement of problem

Globally, a significant proportion of healthcare providers and patients acquire nosocomial infections. (11). It is estimated that more than 1.4 million people worldwide are suffering from infections acquired in hospitals (12).The burden of health care associated infection is different at different setting. It ranges between 5% and 10% of patients admitted to modern hospitals in the developed world acquire one or more infections (13).In some developing countries, the proportion of patients affected by a health care acquired infection can exceed 25%. (7)**.**It is also a major public health problem in Ethiopia and their prevention has been made a priority as reported by a study on 1383 obstetrics and gynecologic patients at a referral hospital in north west Ethiopia, 246 (17.8%) developed hospital acquired infections (14).

Even though, failure to perform appropriate hand hygiene is considered to be the leading cause of HCAI (5), HCW compliance to hand hygiene practice is less than optimal (6). In critical care situations where there are severe time constraints and the workload is higher, compliance to good hand hygiene practices might be as low as 10%. With compliance levels most frequently well below 40%. (6).

Even though quality private health service is part of health sector reform most of the studies on hand hygiene compliance focus on public hospitals which show that less attention were given to private hospitals (14). Comparative studies show that compliance of health care professionals with hand hygiene practice is lower at public hospitals when it compares with that of private hospitals (15; 16).

Studies done in different part of Ethiopia on infection prevention and control measure show that compliance of health care worker with hand hygiene practice is low which most of them focus on public health institution (16; 17; 18; 19). In Addis Ababa, different report shows that low hand hygiene compliance is recognized to be common in both public and private health care institutions. Many studies show that compliance with hand hygiene practice is related to parameters associated with system constraints as well as socio-demographic characteristics, individual, group, environmental and administrative factors (11; 15; 20).

Hence, literature that has explored the Compliance of health care professionals with hand hygiene practice, compare hand hygiene compliance between public and private hospital in study area is very limited. So, it is important to further investigate. Therefore because of the above facts this study aimed to fill the gap by focusing on both public and private hospitals health care professionals' compliance with hand hygiene practices.

1.3 Significance of study

This study provides baseline information on compliance of health care worker with hand hygiene practice for both public and private general hospitals. So that hospitals will use to improve their hand hygiene activities.

In addition because the study focus on comparing compliance of health care worker with hand hygiene practice among public and private hospital the result of this study will be used to share experience of good performance between them. Again, future researchers will benefit from this study that, it will provide them as baseline facts needed to compare their study results as needed.

The result of this research provides additional information to the existing literature and can be used in developing interventions to increase infection prevention and control practices.

2. LITERATURE REVIEW

2.1 Hand hygiene

Health care professionals have the greatest potential to spread micro-organisms that may result in infection due to the number of times they have contact with patients or the patient environment. Hands are therefore a very efficient vehicle for transferring micro-organisms. Hand hygiene can be undertaken using soap and water or hand sanitizers, namely alcohol hand gels. Alcohol hand gels provide an efficient and effective way of disinfecting hands and are actively promoted by health and social care organizations and as part of the world health organization's five moments for hand hygiene. This is before touching a patient, before clean/aseptic procedures, after body fluid exposure, after touching a patient and after touching patient surroundings (6).

2.2 Compliance of health care worker to hand hygiene practice

It has been shown that HCWs encounter difficulties in complying with hand hygiene indications at different levels. Insufficient or very low compliance rates have been reported from both developed and developing countries. compliance of HCWs to recommended hand hygiene procedures has been reported as variable, with mean rates ranging from 5% to 89% and an overall average of 38.7%.Published studies suggest that, on average, compliance with hand hygiene is around 40% (6).

Studies show that the rate of compliance with hand hygiene practice different among public and private health care institution in different setting. A cross sectional comparative study done in India on compliance of hand hygiene practice in operation theaters in tertiary level hospital show that compliance of hand hygiene practice of health care professionals was higher in private hospital (76%) when compared with public hospital (66%). Decontamination of hands before individual's catheter insertion was only followed by 71% in public sector hospitals whereas 95%in private sector. HH after contact with patients was only 50% among public hospitals as against 79.3% in private hospitals. So, the difference of hand hygiene practice among private and public hospitals is statistically significant (21).

Another comparative cross sectional study done to compare the knowledge of hand hygiene among nurses in a public tertiary-care and a private corporate hospital in Amritsar show that majority (97.9%) of the respondents in the private facility had received hand hygiene training in the past three years. Knowledge about the most appropriate time duration to perform hand rubbing was found to be significantly low among public-sector nurses. There is significant variation in knowledge, concerning the correlation of performance of hand hygiene after a body fluid exposure (100% and 83%) and

exposure to patients‟ immediate surroundings (0% and 18%) with the prevention of germ-transmission. Differences were highly significant concerning the correct hand hygiene method to be used in certain situations, such as: palpation of the abdomen (20% and 62%), before giving an injection (10% and 55%) and after removal of examination gloves (10% and 44%) among the study groups (22).

A cross sectional study done in private hospital in Turkey show that the general compliance rate before touching patient is (65.09%), before clean/aseptic procedure is (52.27%), after body fluid exposure risk (69.31%), after touching patients (66.51%), after touching patients surrounding (61.88). Total compliance rate was (63.67%)(24). A self-reported study done in china on prevalence of non-compliance show those Fifty-five subjects (40%) did not always decontaminate their hands before and after examining patients (20). The average compliance with hand washing was around 86.0%.Out of this more number of hand washing opportunities (95.0%) were after patient contact, while it was 72.5% before patient contact. Hand washing was done with alcohol in 96.04% of instances and it was with soap in 3.96% of instances (25).

Another cross sectional study show that, Compliance before patient contact and aseptic tasks was lower compared to that after body fluid exposure/risk, after touching a patient and after touching patient surroundings (26) .The most frequent indications for HH were before (38.6%) and after touching a patient (42.0%). These were followed by after touching the patients' surroundings (16.1%), before a clean aseptic procedure (6.8%) and after exposure to body fluids (5.5%) (27). Majority of the respondents (n=54, 93.1%) washes hand immediately after contacting any blood, body fluid, secretion, excretion and dirty substances, and more than half washes hands when comes in contact with different patients and after taking of gloves with 65.5% an d 56.9 % respectively (28).
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Interventional study done in, Africa, Mali show that, overall hand hygiene compliance at baseline was low (8.0%).Compliance also varied according to hand hygiene indications before patient contact increase from 5.2% - 20.7%, before aseptic task increase from 2.6% to 14.8%, after body fluid exposure risk increase from 15.8% to 41.0%, after patient contact increases from 16.3% to 39.8% and after contact to patient surrounding increase from 3.3% to 3.7% (29).

A self-administered cross sectional study done in Nigeria to assess knowledge and practice of standard precaution show that none of the respondent 0 (0%) agreed that hand washing in clinical practice should be done before procedure only. 52 (32.50%) said that hand washing should be

instituted after procedure, 98 (61.25%) said before and after procedure, 10 (6.25%) said it should be done following contact with body fluid (15).

Another self-administered and focus group discussion cross sectional study done in Kenya on Health care professionals adherence to infection prevention practices and control measures show that hand hygiene was frequently done using with soap and water or antiseptic solution this was confirmed by 91.3% of casual workers, 75% of nurses, 71.4% laboratory staff as well as support staff and 57.1% of clinicians. Majority of HCWs agreed they cleaned their hands with sodium hypochlorite solution rather than 70% ethanol solution. These were 94.7% of nurses, 74.3% clinicians, 73% of casuals, 21.4% of laboratory staff, and 5.7% of support staff. While hand hygiene was practiced by HCWs, not everyone washed hands after removing gloves. According to focus group discussion, hand hygiene products commonly used were bar soap and toilet soap under running water (30).

A study conducted in Jimma university hospital in, south west Ethiopia, showed that hand washing practice by the nursing staff was inadequate. This study demonstrated that only 43.2% of the nursing staff practices adequate hand washing while 56.8% of them practice inadequate hand washing (16).
A cross sectional study done in Bahir Dar city that included both public and private health institution show that Health care professionals estimation of their own hand hygiene practice, majority of health care workers 292 (82.5 %) had hand hygiene practice after completing the procedure they perform and about 180(50.8 %) wash their hand before the procedure. The overall hand hygiene practice score was 244(69.0%). (17).

A self-administered cross sectional study done at Tikur Anbessa (Black Lion) hospital and St. Paul's hospital in Addis Ababa show that among physicians, low rates of hand hygiene practice were reported before patient contact (7%), before caring for a wound (42%) and after patient contact (48%).Physicians were most likely to practice hand hygiene when their hands felt or looked dirty (82%), after caring for a wound (85%) and after contact with blood or bodily fluids (97%).

A cross sectional study done on standard precautions practice among health care workers in public health facilities of Mekelle special zone, northern Ethiopia show that from 483 HCWs only 297(61.5%) always practice hand hygiene after any direct contact with patient, 166(34.4%) practice often and the remaining 20(4.1%) practice seldom (19).

2.3 Factors associated with compliance to hand hygiene practice

Numerous factors have been identified as influencing compliance to recommended HH practices, including; lack of access to HH facilities at point of care, time constraints, skin irritation from frequent hand washing, lack of knowledge of the potential risks of transmission of microorganisms to patients and the impact of improved HH on reducing HCAI, misconceptions about HH, and lack of role models among colleagues and superiors (31).Based on the diverse nature of these factors, the WHO (2009) stresses that successful HH improvement requires multiple strategies to address the different barriers. Strategies identified by the WHO as critical components of programs aimed to improve HH include system change, workplace reminders, training and education, evaluation and feedback, and creating a patient safety climate (32).

A systematic review show that Corroboration exists amongst the research as to the reasons for this non-compliance. Four studies specifically quantify different similar reasons for non-compliance , each identifying a range of reasons, for example ‘lack of time’, ‘put patient at risk’, ‘lack of means’, ‘precautions not warranted’ ‘interfere with patient care’ or ‘forgetfulness’. Two further studies indicated similar reasons although they were not quantified and included ‘not needed’, ‘patient not a risk’ and ‘lack of knowledge (26).

A cross sectional study conducted in china show that Compliance with UPs was significantly associated with a range of variables. Student nurses and doctors were more compliant than trained nurses and laboratory workers, as were those HCWs with a Good attitude to caring for PWAs and those more satisfied with their job. Compliance was positively associated with length of time on the job, knowledge of occupational blood borne pathogen transmission (P = .001), knowledge of UPs, and perception of safety climate and was negatively associated with the perception of barriers to safe practice. UPs compliance was not associated with having received training in UPs (20).

An observational study done on factors affecting hand hygiene adherence at a private hospital in Turkey hand hygiene adherence rates of trained doctors was higher than untrained ones before patient contact and after environment contact [48% (35/73) versus 82% (92/113) and 23% (5/22) versus 76% (37/49) respectively]. Hand hygiene adherence rate of trained nurses was higher than untrained ones before patient contact [63% (50/79) versus 76% (37/49)]. Hand hygiene adherence rate of trained AHP was higher than untrained ones before asepsis [20% (2/10) versus 73% (16/22)] (40).

A cross sectional study done in Nigeria shows that 30 (18.75%) of the respondents were of the view that limited knowledge is a barrier to practice of standard precautions in FMCG, 20 (12.50%) irregular supply of infection control materials, 18 (11.25%) work load, 20 (12.50%) limited nursing personnel, 2 (1.25%) time constraint, 4(2.5%) protective equipment reduces my skills, 4 (2.5%) poor supervision, 34 (21.25%) low attitude of health workers, 12 (7.5%), poor compliance by senior colleagues and 16 (10%) emergency situations (15). About 12(24%) of the respondents indicated lack of knowledge as a factor that impeded them from proper infection control practice, 13(26%) indicated lack of time, 8(16%) indicated lack of equipment, 5(10%) indicated forgetfulness as a factor and 12(24%) indicated lack of resources as a factor impeding them (33).

A cross sectional study done in Gondar and Debre Markos hospital show that in the bivariate analysis, age, service years, sex of the participants, ever taking training on infection prevention methods, and educational level were found to be significantly associated with practice of surgical site infection prevention activities. However, only age, sex, and educational level of the participants were found to be significantly associated in the multivariate analysis. Female nurses were about 2 times more likely to practice surgical site infection prevention activities as compared to male nurses.Those nurses who are 30 years or older were about 2 times more likely to practice surgical site infection prevention actives as compared to those who are less than 30 years old. Nurses who have diploma were about 2 times more likely to practice surgical site infection prevention activities as compared to those who have B.S.c degree or higher (34).

Cross sectional study done in Bahir Dar city show that nurses reported washing their hands more frequently than physicians; 71% of nurses reported washing their hands at least 6 times per day vs. 38% of physicians (18). The reason given by the respondent those who didn't practice hand hygiene based on recommendations of hand hygiene practice were unavailability of hand washing facilities219 (38.1%), it takes time 111 (31.4%),if glove used not necessary 39 (11. %), and the least response not necessary 5 (1.4 %) (17).

A self-administered cross sectional study done at Tikur Anbessa (Black Lion) Hospital and St. Paul's Hospital in Addis Ababa show that majority of both physicians (93%) and nurses (92%) felt they would be less likely to transmit infections to their patients if they performed hand hygiene; however, only 50% of HCW reported receiving hand hygiene training and only 30% thought their supervisors stressed the importance of hand hygiene. The majority of HCWs felt hand hygiene agents (alcohol based sanitizer or soap and water) were not readily available (77%) and 67% of all HCWs reported that available alcohol based hand sanitizers caused irritation and dryness. Significantly more

physicians than nurses reported that they often forget to perform hand hygiene (52% vs. 21%, respectively) (18).

Another cross sectional study done on standard precautions practice among health care workers in public health facilities of Mekelle special zone, northern Ethiopia the multivariate analysis showed, the odd of good practice was 2.5 times higher in young age more than HCWs of older age. Odd of good practice was likely to be reduced by 50% among males compared to female. The type of health profession has association with the practice of standard precautions. Compared to laboratory technician, doctors and nurses had 80% and 70% reduced odds of good practice respectively. HCWs working in the rooms having written material for risk communication had 1.8 times increase the likelihood of practicing standard precautions than HCWs working in rooms without written material for risk communication. The odd of good practice was likely to be higher by 1.6 times in HCWs trained for standard precautions than those didn't take training. But in this study work experience turned to be insignificant (19).

Similarly another cross sectional study done on hand hygiene compliance and associated factors among health care providers in Gondar University Hospital, Gondar, North West Ethiopia show that in the Bivariate analysis knowledge of HHC, taking training on HH, the hospital promoting the importance of HH compliance, the availability of hand washing sink, soup and water, individual towel/tissue paper for drying, the availability of ABHR for HH compliance, knew the presence of IP committees are significantly associated with Hand hygiene compliance. The multivariate analysis was used to identify factors that were predictive of hand hygiene compliance. Knowledge of HHC, taking training on HH, availability of individual towel/tissue paper, availability of ABHR in the ward and knew presence of IP committees are independently associated factors with hand hygiene compliance (35).

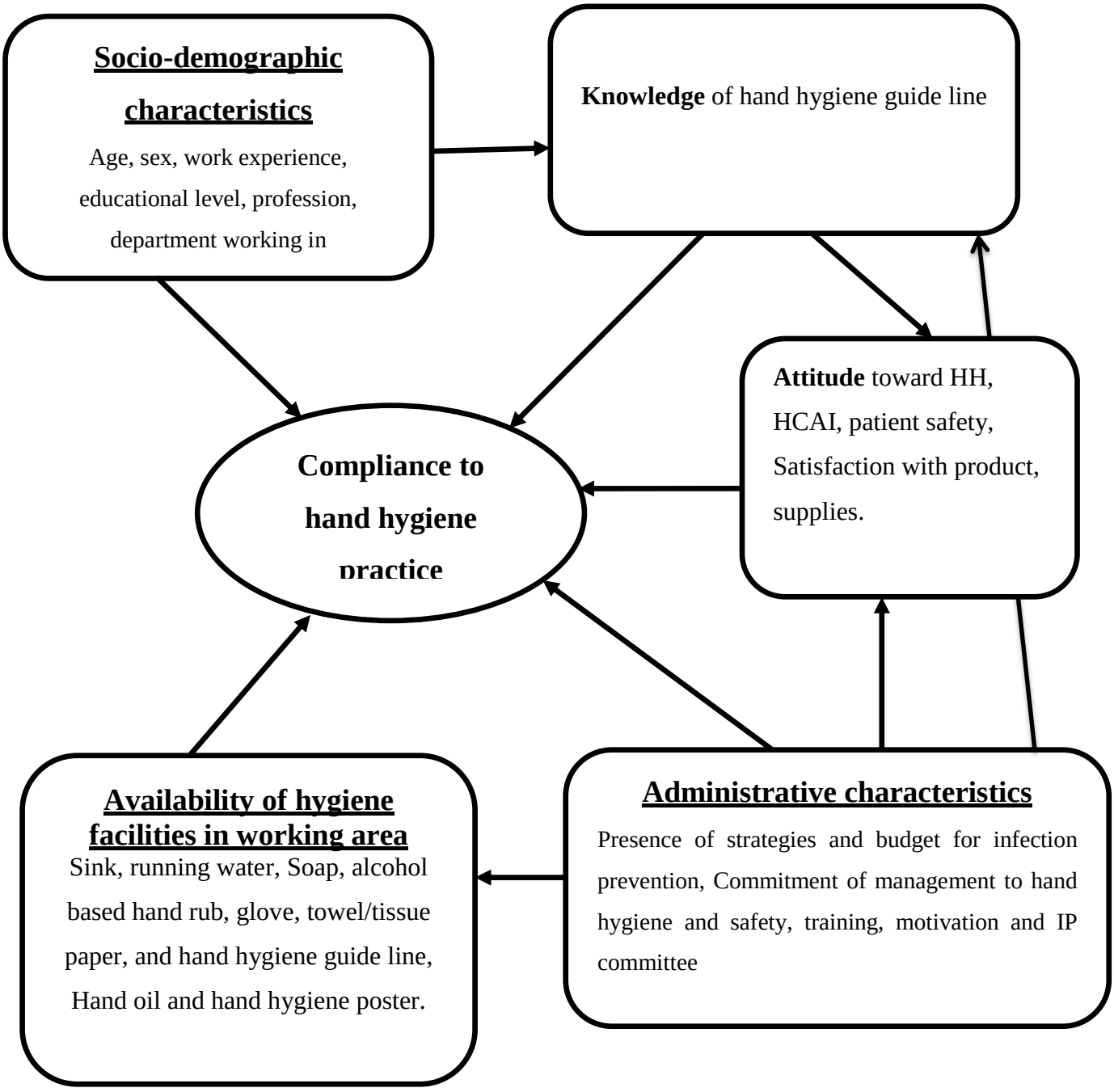

Figure 1: Conceptual Framework adapted from another literatures

3. OBJECIVE

General Objective

- To describe compliance of health care professionals with hand hygiene practice and its associated factors among general hospital in Addis Ababa, Ethiopia from July1, 2017 to July 30, 2017.

Specific Objective

- To describe compliance of health care professionals with hand hygiene practice in general hospitals in Addis Ababa.
- To assess associated factors that influences the compliance with hand hygiene practice of general hospital in Addis Ababa.

4. METHODOLOGY

4.1 Study Area and Period

The study was conducted in Addis Ababa city which is the capital city of Ethiopia and center of African Union. Administratively, the city is divided in to 10 sub cities and 116 Woredas/district. The total area of the city is 54,000 hectares (36). According to the 2013 population estimation, the total population of Addis Ababa is more than 4 million (37).

Regarding health institutions, the city has 134 private primary clinics, 437 private medium clinics, 265 private specialty clinics, and 117 government health centers, 12 public hospitals, 24 private general hospitals (36). The study was conducted from July1, 2017 to July 30, 2017.

4.2. Study Design

Institutional based cross sectional study design was used to describe the level of compliance with hand hygiene practice and its associated factors among general hospital in Addis Ababa, Ethiopia.

4.3. Source and Study Population

The source population for this study was all health care professional working in general hospital in Addis Ababa.

The study population was all health care professional working in selected general hospital in Addis Ababa.

4.3.1. Inclusion criteria

All health care professionals who were on active duty during data collection time were included in study.

4.3.2. Exclusion criteria

- All health care professional those were working in only pharmacy department.
- Health care professional those were working on only administrative part in hospital
- Health care professionals those work as part timer.

4.4. Sample Size

- **Sample size for first specific objective**

By using single proportion formula and using 69% compliance rate taken from published study done at Babir dar city in 2013, margin of error 5% and taking confidence interval ($\mathbf{Z}_{\alpha/2}$) of 95%.

$$N=\left[\frac{Z\alpha/2}{d}\right]^2 p[1-p] \longrightarrow N=\left[\frac{1.96}{0.05}\right]^2 0.69[1-0.69] = 329$$

Including 10% for non-respondent total sample size was 362

- **sample Size for second specific objective**

$$N = \frac{[Z\alpha\sqrt{2\ p(1-p)} + Z\beta\sqrt{P_1(1-P_1) + P_2(1-P_2)}]^2}{(p_1-p_2)^2}$$

Where $\mathbf{p = (p1 + p2)/2}$

N= required minimum sample size for the two groups

$p_{1=}$ proportion of compliance with hand hygiene in public hospital

$p_{2=}$proportion of compliance with private hospital

$\mathbf{Z_{\alpha/2}}$**=**critical value at 95% level of significance

Z_β= standard normal distribution value corresponding to 80% power to detect the assumed difference =0.84.

Proportion was taken from similar study done in India (21) with compliance of hand hygiene practice at public hospital (66%) and at private (76%).

So,

$P = (0.66 + 0.76)/(2) = 0.71$

$$N = \frac{[1.96\sqrt{2 * 0.71(1-0.71)} + 0.84\sqrt{0.66(1-0.66) + 0.76(1-0.76)}]^2}{(0.66-0.76)^2}$$

N = 322

So, the sample size for each group was 354 including 10% for non-respondent

Therefore, Total sample size for this study was 708.

- In general to include the sample size which answers the two objectives the maximum among the two was taken. Accordingly the sample size of second objective (708) was maximum and it was taken as sample size for this study.

4.5. Study Variables

4.5.1. Dependent Variables: - hand hygiene practice

4.5.2. Independent Variables:

- **Socio-demographic characteristics:** Age, Sex, Work experience, profession, Educational level, department/ward they are working in.
- **Personal characteristics:** knowledge of hand hygiene guide line, attitude toward hand hygiene and health care acquired infection.
- **Administrative characteristics:** training, knowing presence and functionality of infection prevention committees, Commitment of management to hand hygiene and safety, Knowing presence budget for infection prevention, feedback, monitoring and evaluation, motivation for performing good.
- **Availability of hand hygiene facilities:** availability and functionality of sink in the department, availability of running water and Soap, availability of alcohol based hand rub in the department, availability of towel/tissue paper, availability of glove, availability of hand cream, availability of hand washing guide line at working department, availability hand hygiene poster.

4.6 Sampling procedures

Out of 29 general hospitals 9 of them was selected by simple random sampling system. Then appropriate sample size was selected by SRS method from list of health care professionals working at selected ward/department of selected hospitals. Sampling procedures is summarized on figure 2.

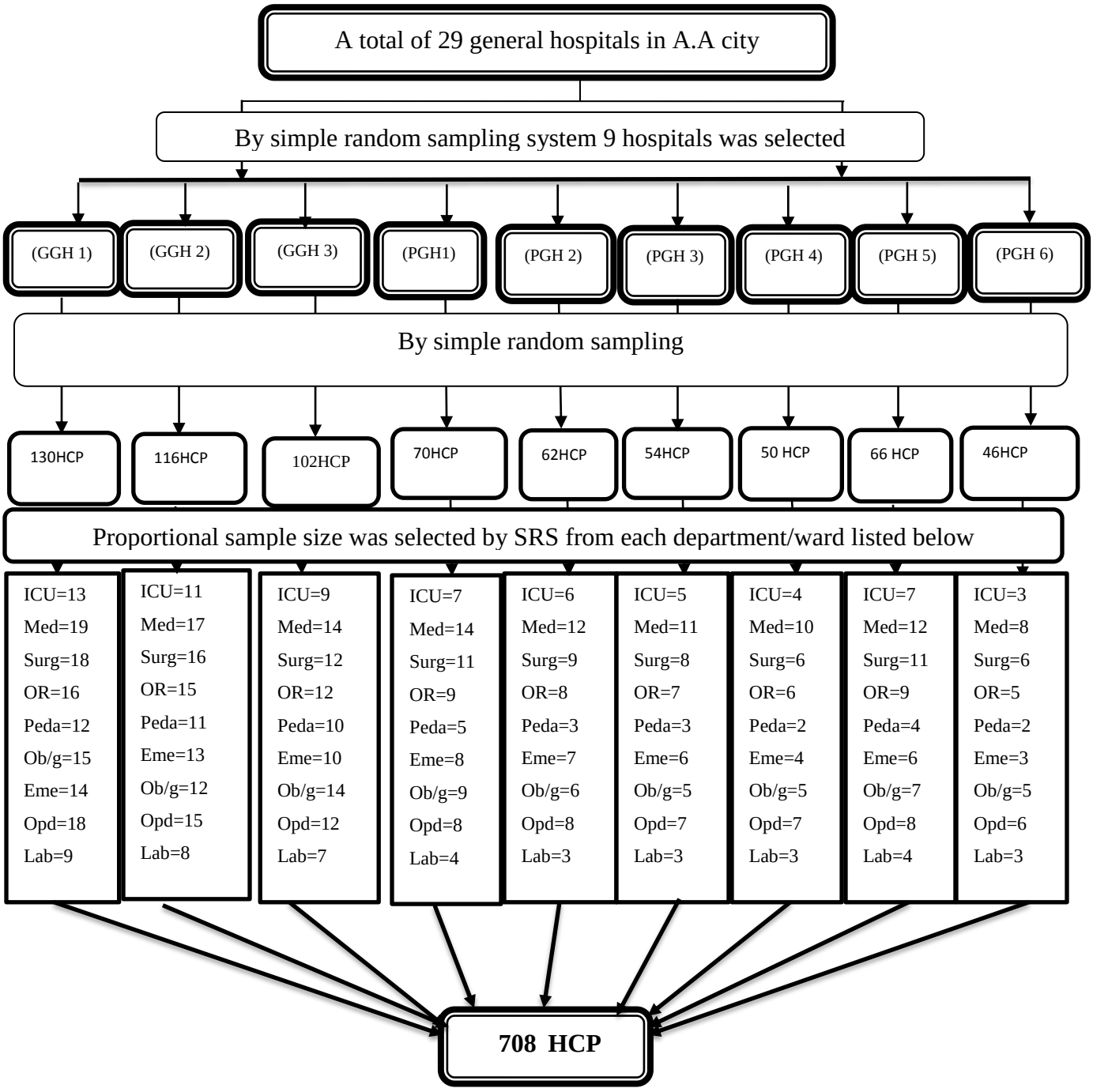

Figure2: Schematic presentation of sampling procedure of study to select study population

4.7. Data collection tool and procedure

The self-administered questionnaire which was adapted from questionnaire developed by world health organization was used to find out current compliance of hand hygiene practices and associated factors consists of socio demographic characteristic question (7), Question related to administrative characteristics which may affect hand hygiene practice (8), Question related to availability of hand hygiene facility which may affect hand hygiene practice(10), knowledge of hand hygiene guide line (12 items) via yes/no/I don't know, attitude toward hand hygiene and health care acquired infection (24 items), and hand hygiene practices via 5-point likert scales named as hand hygiene practices (14 items) as shown in the conceptual framework. The questionnaire was prepared in English and translated to Amharic and back to English to keep the consistency of the questions. Data was collected (facilitator) by four diploma nurse and one supervisor who have BSc. in environmental health using pretested questionnaire in different departments.

4.8 Operational definition

Hand hygiene: - refer to any method that removes or destroys microorganisms on hands (32).

Health care profession: - any person who is trained in medical care and giving health service

Hand washing: - refers to cleansing hands with water, a cleansing agent such as soap or an antiseptic solution and mechanical action (6).

Alcohol-based hand rub: - refers to an alcohol-containing preparation designed for application to the hands for reducing the number of viable microorganisms on the hands (8)**.**

Healthcare-associated infection: are defined as infections that occur during health care interventions in any health care setting where care is delivered (1).

Potentially contaminated objects: - refers to materials on state of having been actually or potentially in contact with microorganisms that could be capable of producing disease or infection (6).

General Hospital: is a medical facility that provides health care to both inpatients and out-patients and treats many types of diseases with professionals. Provide all types of clinical service including surgery (31).

Knowledge of hand hygiene: - refers to health care worker awareness and skill have in relation to questions in the questionnaire per hand hygiene guideline (5). **Good Knowledge: -** refers to health care worker who scored the mean and above the mean value of the knowledge questions value, **low knowledge: -** refers to health care worker who scored below the mean of the total knowledge questions value (19).

Attitude toward hand hygiene: - Is defined as subjective feelings of Health care professional about the validity of an idea or set of facts related to the recommended hand hygiene and health care acquired infection. **Good attitude: -** refers to health care worker who scored the mean and above the mean value of hand hygiene attitude score, **Low Attitude**: refers to health care worker who scored below the mean value of hand hygiene attitude score (19).

Hand hygiene compliance: - Refer to hand hygiene practice measured based on 14 CDC standard questions of hand hygiene practices (6). Health professionals could be considered as "good" when they score equal or above mean score hand hygiene practice, and considered as "low" when they score below mean score of hand hygiene practices (19).

4.9. Data Quality Assurance

For data quality control purpose, the data collectors (facilitator) were trained before the data collection and supervised during the data collection period and the questionnaire will be pre-tested. The pre-test was done on (5% of the sample size) health professional working in Amin general hospital. The questionnaire was adapted from questionnaire developed by world health organization (6). Principal investigator and supervisors were made spot-checking and reviewing the completed questionnaires by the data collectors to ensure completeness and consistency of the information collected. Each questionnaire was checked for completeness, missed values and unlikely responses; those incomplete questionnaires were omitted from the analysis

4.10. Data management and analysis Procedures

The data was entered into EPI data version 3.1 which is epidemiological software packages for editing, cleaning, coding, and check completeness and consistency, and then exported to SPSS version 22 for data management and analysis. Descriptive statistics of percentages and mean was carried. In addition, bivariate analysis was used to identify significant variables and then the variables with p value <0.25 were taken to multiple logistic regressions to determine independent effect of association factors on compliance to hand hygiene practice. Odds ratio with 95% confidence intervals and significance level at $P< 0.05$ was used to see the association between factors and compliance to hand hygiene practice. The output of analysis was displayed by table.

4.11 Ethical Considerations

Before conducting the study ethical clearance was obtained from Addis Ababa University, college of health sciences, school of public health research and ethics committee (REC). In addition ethical clearance was obtained from Addis Ababa health bureau ethical committee. A formal letter obtained from Addis Ababa health bureau was submitted to all hospitals included in study, participants' right to self-determination and autonomy was respected, study participants was given any information they need, verbally and in written prior to a self-administration .The right of each respondent to refuse, answer for few or all questions was respected. Omitting names of the participant from the questionnaire and as no personal details was recorded or produced on any documentation related to the study that help to assure confidentiality of the information and respondents. Participation was voluntary and participant can withdraw from the study at any time without explanation.

4.12. Plan of Dissemination of Findings

The results of this study will be presented to Addis Ababa University, college of health science, school of public health as thesis of master of public health and it will also be distributed to the Addis Ababa health bureau and Food medicine health care administration and control authority. Dissemination can be also done through workshop, conference and if possible through publication in peer reviewed journals.

5. RESULT

5.1. Socio demographic characteristics

A total of708 health care professional were included in the study and 651 of them filled self-administered questions with response rate of 91.9%. Out of which 335(51.46%) were from private hospital and 316(48.5%) were from public hospital. Among respondents 445(68.4%) were female and 205(31.5%) were male. Majority of respondents were nurses 399(61.3%) which is the highest for both public and private hospital 184(58.2%) and 213(64.2%) respectively. A mean age of respondents were 32.06 (±7.58) years with public hospitals mean age of 32.9(±6.8) and that of private hospitals were 31.28(±8.2). Majority of respondent educational level for both group was first degree 373(57.3%) then followed by diploma 189(29%) and then Master/above 89(13.7%). A mean work experience (±SD) were 8.59 (±6.84) years with public hospitals mean work experience of 9(±5.9) and that of private hospitals were 8.15(±6). The result of socio-demographic variables is summarized in the table below (Table2).

Table 1: Distribution of socio demographic characteristics of respondents in general hospital in Addis Ababa, Ethiopia, 2017

Variables	Owner of hospital		**Total**
	Public	**Private**	**Count (%)**
	Count (%)	**Count (%)**	
Sex of respondent (n=650)			
Male	98(15.1)	107(16.4)	205(31.5)
Female	217(33.3)	228(35.0)	445(68.4)
Age of respondent (n=639)			
<=32years	177(27.7)	237(37.1)	414(64.8)
>32 years	132(20.7)	93(14.6)	225(35.2)
Profession of respondent(n=651)			
Nurse	184(28.3)	215(33)	399(61.3)
Doctor	74(11.4)	54(8.3)	128(19.7)
Midwifery	23(3.5)	23(3.5)	46(7.1)
Laboratory	22(3.4)	19(2.9)	41(6.3)
Other(HO & Anesthesiologist)	13(2.0)	24(3.7)	37(5.7)
Educational Level(n=651)			
Diploma	59(9.1)	130(20.0)	189(29.0)
First degree	208(32)	165(25.3)	373(57.3)
Master and above	49(7.5)	40(6.1)	89(13.7)
Work experience(n=636)			
<=8 years	174(27.4)	232(36.5)	402(63.8)
>8 years	136(21.4)	94(14.8)	230(36.2)
Working department(n=651)			
Medical	44(6.8)	67(10.3)	111(17.4)
Surgical	42(6.5)	47(7.2)	89(13.7)
OR	41(6.3)	41(6.3)	82(12.6)
OPD	35(5.4)	43(6.6)	78(12.0)
Gyn/ob	41(6.3)	36(5.5)	77(11.8)
Emergence	31(4.8)	31(4.8)	62(9.5)
ICU	29(4.5)	32(4.9)	61(9.4)
Pediatrics	31(4.8)	18(2.8)	49(7.5)
Laboratory	22(3.4)	20(3.1)	42(6.5)

5.2 Knowledge related to hand hygiene

Sampled respondents were requested to respond to a series of questions in order to assess their knowledge on hand hygiene guidelines. Overall hand hygiene related correct knowledge of health care professional's ranges from 25% (3/12) to 100% (12/12), which ranges from 25%(3/12) to 100%(12/12) for those from public hospitals and 46.7%(5/12) to 100%(12/12) for those from private one; the total mean score was 9.67(±0.067); which is 9.89(±0.099), 9.47(±0.090) for public and private hospitals respondents respectively. Around 368(56.5%) of respondents have good knowledge of hand hygiene guide line and 122(43.5%) have low knowledge based on good and low knowledge definition. Those from public hospitals have 194(61.4%) good knowledge and 122(38.6%) low knowledge, and from those from private hospital have 174(51.9%) good knowledge and 161(48.1%) low knowledge. Each knowledge question score is shown in table 3.

Table 2: Knowledge of health care professionals of hand hygiene guide line in general hospital in Addis Ababa, Ethiopia, 2017

Hand hygiene questions	Possible response	Owner of hospital		Total Count (%)
		Public Count (%)	**Private Count (%)**	
Hand hygiene is the primary measure to reduce health care acquired infection	Yes	270(41.5)	329(50.5)	599(92.0)
	No	46(7.1)	6(0.9)	25(8.0)
Alcohol-based hand rubs should not be used when hands are visibly soiled	Yes	256(39.3)	240(36.9)	496(76.2)
	No	60(9.2)	95(14.6)	155(23.8)
Alcohol-based hand rubs will still be effective if applied for less than 60 seconds	Yes	233(34.3)	216(33.6)	442(67.9)
	No	93(14.3)	116(17.8)	209(32.1)
Hand hygiene is required following the removal of gloves after patient contact	Yes	267(41.5)	283(43.5)	550(84.5)
	No	49(7.5)	52(8.0)	101(15.5)
Single-use cloth towels and paper towels are acceptable for drying hands in patient care areas	Yes	268(41.2)	254(39.0)	522(80.2)
	No	48(7.4)	81(12.4)	129(19.8)
Hand hygiene must be performed before patient contact, following patient contact, and prior to and following care wound	Yes	276(42.4)	300(46.1)	576(88.5)
	No	40(6.1)	35(5.4)	75(11.5)
When using an alcohol-based hand rub to decontaminate hands they should be rubbed together until dry	Yes	258(39.6)	228(35.0)	486(74.7)
	No	58(8.9)	107(16.4)	165(25.3)
Compliance to hand hygiene practice can reduce chance of spreading of infection	Yes	276(42.4)	301(46.2)	577(88.6)
	No	40(6.1)	34(5.2)	74(11.4)
Hand creams and lotions are recommended for health care workers hands	Yes	215(33.0)	184(28.3)	399(61.3)
	No	101(15.5)	151(23.5)	252(38.7)
Gloves should not be reused when caring for different patients	Yes	231(35.5)	248(38.1)	479(73.6)
	No	85(13.1)	87(13.4)	172(26.4)
Microbes causing HCAI are most frequently spread between patients on the hands of health-care workers	Yes	286(43.9)	280(43.0)	566(86.9)
	No	30(4.6)	55(8.4)	85(13.1)
Performing hand hygiene after caring for a wound Can protect from health care acquired infections.	Yes	298(45.8)	307(47.2)	605(92.9)
	No	18(2.8)	28(4.3)	46(7.1)
Good Knowledge (count (%))		194(61.4)	174(51.9)	368(56.5)
Low knowledge (count (%)		194(38.6)	161(48.1)	283(43.5)

5.3 Attitude of Heath care professional to ward hand hygiene and health care acquired infection

Health care professional responded on their attitude toward hand hygiene and health care acquired infection on clinical setting. According to response rated based on five likert scale namely; 1-strongly disagree, 2-disagree, 3-not sure, 4-agree and 5-strongly agree. The overall mean attitude of respondents were 3.75(±0.02). Based on the definition of good and low attitude around 301(46.2%) of heath care professional had Good attitude and 350(53.8%) had low attitude. Accordingly 159(50.3%) of respondents from public hospitals had Good attitude and around 142(42.4%) of those from private hospitals had Good attitude. Mean scores for individual scale item is shown in table 4.

Table 3: Mean attitude of health care professional in general hospital in Addis Ababa, Ethiopia, 2017

Attitude questions	Owner of hospital		Total	
	Public Mean(s.e.m)	**Private** Mean(s.e.m)	**Mean (s.e.m)**	%
The facilities in which I am working in emphasize the importance of hand hygiene.	3.70(0.07)	4.20(0.06)	3.96(0.45)	79.2
The importance of hand hygiene is emphasized by my clinical supervisors.	3.91(.08)	3.82(0.06)	3.86(0.04)	77.2
I have a duty to act as a role model for other health Care workers.	4.18(0.06)	4.12(0.06)	4.10(0.04)	82.0
When busy it is more important to complete my tasks than to perform hand hygiene. ^	3.45(0.08)	2.90(0.07)	3.17(0.05)	63.4
Performing hand hygiene in the recommended Situations can reduce patient mortality.	4.34(0.06)	4.16(0.06)	4.25(0.04)	85.0
Performing hand hygiene in the recommended situations can reduce medical costs associated with health care-acquired infections.	4.36(0.49)	4.12(0.06)	4.24(0.04)	84.8
I can‘t always perform hand hygiene in recommended situations because my patient‘s needs come first. ^	3.43(0.08)	3.4(0.08)	3.41(0.06)	68.2
Prevention of health care-acquired infection is a valuable part of a health care worker‘s role.	4.25(0.05)	4.23(0.06)	4.24(0.04)	84.8
I follow the example of senior Health care professionals when deciding whether or not to perform hand hygiene. ^	2.19(0.07)	3.36(0.08)	2.79(0.06)	55.8
An infectious disease contracted in the health care setting may threaten my life or my career	4.28(0.05)	3.97(0.06)	4.12(0.04)	82.4
I believe I have the power to change poor hand hygiene practices in the workplace	4.29(0.05)	4.10(0.06)	4.20(0.04)	84.0

Failure to perform hand hygiene in the recommended situations can be considered negligence	4.17(0.06)	4.16(0.06)	4.16(0.04)	83.2
Hand hygiene is a habit for me in my personal life	4.23(0.05)	4.25(0.05)	4.24(0.04)	84.8
I am confident I can effectively apply my Knowledge of hand hygiene to my clinical practice	4.18(0.06)	4.18(0.05)	4.18(0.04)	83.6
It is an effort to remember to perform hand Hygiene in the recommended situations	4.16(0.06)	4.03(0.06)	4.10(0.04)	82.0
I would feel uncomfortable reminding a health Professional to hand wash. ^	3.34(0.075)	2.9(0.075)	3.11(0.05)	62.2
Performing hand hygiene slows down building Immunity to disease. ^	3.12(0.08)	2.60(0.08)	2.85(0.06)	57.0
I belief that among all patient safety hand hygiene very important.	4.28(0.04)	4.34(0.06)	4.31(0.04)	86.2
Dirty sinks can be a reason for not washing hands. ^	3.11(0.07)	2.95(0.08)	3.03(0.05)	60.6
Lack of an acceptable soap product can be a reason for not cleansing hands. ^	3.38(0.07)	3.07(0.08)	3.22(0.05)	64.4
Hand washing agent cause irritation and dryness is the reason for not cleaning my hand. ^	3.76(0.07)	3.48(0.08)	3.62(0.05)	72.4
Too busy/insufficient time is the reason for not cleaning my hand. ^	3.66(0.07)	3.55(0.07)	3.60(0.05)	72.0
If we use glove it is not necessary to wash our hand. ^	3.91(0.07)	3.82(0.07)	3.87(0.05)	77.4
Forgetfulness is reason for not washing my hand. ^	3.58(0.07)	3.40(0.08)	3.49(0.05)	68.9
Overall	3.80(0.03)	3.71(0.03)	3.75(0.02)	74.8
Good attitude (count (%))	159(50.3)	142(42.4)	301(46.2)	
Low attitude (count (%))	157(49.7)	193(57.6)	350(53.8)	

Scale: 1=strongly disagree to 5= strongly agree, ^ indicates the item is reverse coded

5.4. Administrative characteristics of the hospital which may affect Hand hygiene practice

Among respondents around 579(88.9%) of them know that the hospital that they are working in have budget for infection prevention activities. Out of this 262(82.9%) were from public hospitals and 317(94.6%) from private hospitals. More than half of respondents 377(57.9%) reported that they have taken training on hand hygiene; which was 202(63.9%) from public hospitals and 175(52.2%) was from private hospitals. About 549(84.3%) of respondents know that presence of infection prevention committee in the hospital; out of this 258(81.6%) from public hospitals and 291(86.9%) from private hospitals. About 242(37.2%) respondents said there was motivation for compliance with hand hygiene practice; 93(29.4%) from public hospitals and 149(44.5%) from private hospitals. Detail of administrative characteristics of the hospitals is depicted in (Table 5).

Table 4: Administrative characteristics which may affect Hand hygiene practice in general hospital; Addis Ababa, Ethiopia, 2017

Variables	Possible answers	Owner of hospital		Total Count (%)
		Government Count (%)	private Count (%)	
knew that the hospital have budget for infection prevention activities	Yes	262(82.9)	317(94.6)	579(88.9)
	No	54(17.1)	18(5.4)	72(11.1)
Knew leaders and senior managers at the hospital committed to support and openly promote hand hygiene	Yes	201(63.6)	241(71.9)	442(67.9)
	No	115(36.4)	94(28.1)	209(32.1)
Taken training on hand hygiene within past two year	Yes	202(63.9)	175(52.2)	377(57.9)
	No	114(36.1)	160(47.8)	274(42.1)
Knew presence of infection prevention committee in the hospital.	Yes	258(81.6)	291(86.9)	549(84.3)
	No	58(18.4)	44(13.1)	102(15.7)
Know functionality of infection prevention committee in the hospital.	Yes	175(67.83)	203(69.76)	378(68.85)
	No	83(32.17)	88(30.24)	171(31.15)
Presence of monitoring and evaluation system on hand hygiene compliance in your hospital.	Yes	156(49.4)	173(51.6)	329(50.5)
	No	160(50.6)	162(48.4)	322(49.5)
Presence of regularly feedback on your hand hygiene performance from cloth supervisor.	Yes	229(35.2)	90(28.5)	229(35.2)
	No	422(64.8)	226(71.5)	422(64.8)
Présence of motivation for compliance to hand hygiène practice in the hospital	Yes	93(29.4)	149(44.5)	242(37.2)
	No	223(70.6)	186(55.5)	409(62.8)

5.5. Availability of hand hygiene facilities in the hospital

About 615(94.5%) of respondents report sink is available in the working ward; out of this 292(92.4%) from public hospitals and 323(94.6%) from private hospitals. Similarly 521(80.0%) of respondents reported running water is available; 229(72.5%) from public hospitals and 292(87.2%) from private hospitals. 526(80.8%) reported that alcohol based hand rub is available; out of this 254(80.4%) is from public hospitals and 277(81.2%) from private hospitals. Around 400(61.4%) reported hand hygiene posters are displayed in the working areas as reminder; 176(55.7%) from public hospitals and 224(66.9%) form private hospitals. Summary of availability of hand hygiene facilities in the hospital is shown in (table 6).

Table 5: Availability of hand hygiene facility in general hospital in Addis Ababa, Ethiopia, 2017

Variable	Possible answers	Owner of hospital		Total Count (%)
		Government Count (%)	private Count (%)	
Availability of sink in the working dep.t	Yes	292(92.4)	323(94.6)	615(94.5)
	No	24(7.4)	12(3.6)	36(5.5)
Functionality of sink?	Yes	269(92.2)	288(89.1)	557(90.57)
	No	24(7.8)	35(10.9)	59(9.43)
Availability of running water in the working ward/department	Yes	229(72.5)	292(87.2)	521(80.0)
	No	87(27.5)	43(12.8)	130(20.0)
Soap available in the working ward/department	Yes	249(78.8)	249(74.3)	498(76.5)
	No	67(21.2)	86(25.7)	153(23.5)
Alcohol based hand rub available in the working ward/department	Yes	254(80.4)	272(81.2)	526(80.8)
	No	62(19.6)	63(18.8)	125(19.2)
Towel\tissue paper available in the working ward/dep.t	Yes	84(26.6)	160(47.8)	244(37.5)
	No	232(73.4)	52.2(175)	407(62.5)
Glove available in the working ward /dep.t	Yes	271(85.8)	240(71.6)	511(78.5)
	No	45(14.2)	95(28.4)	140(21.5)
Hand creams and lotions availability in the dept.	Yes	77(24.4)	103(30.7)	180(27.6)
	No	239(75.6)	232(69.3)	471(72.4)
Hand washing guide line availability in the working ward/dep.t	Yes	103(32.6)	202(60.3)	305(46.9)
	No	213(67.4)	133(39.7)	346(53.1)
Do hand hygiene posters are displayed in the working department as reminders	Yes	176(55.7)	224(66.9)	400(61.4)
	No	139(44.3)	108(32.2)	37.9(38.6)

5.6. Health care professionals hand hygiene practice

Based on 5-point likert scale which required respondents to estimate their compliance for hand hygiene Practice in relation to a set of 14 situations show that across the whole sample the average score on the hand hygiene practice of health care professionals ranges from never to always cleansing their hands in the indicated situations (Table 7). Health care professionals were most likely to report performing hand hygiene always if they look or feel dirty (71.9%), after contact with blood or body fluids (61.4%), after touching potentially contaminated Objects (61.6%), after caring for a wound (53.8%). In other way health care professionals were least likely to perform hand hygiene always before entering isolation room (19.4%), before patient contact (15.7%), before wound care (23.5%) and after existing isolation room (27.2%),

The overall good hand hygiene compliance was found 328(50.4%) and low hand hygiene compliance was 323(49.6.9%); which was for those from public hospitals good and low hand hygiene compliance was 179(56.6%) &137(43.4%) respectively and for those from private hospitals good and low hand hygiene compliance was 149(44.5%) &186(55.6%) respectively. Out of hand hygiene practice situations highest score was reported when health care professionals look or feel dirty 4.56(91.2%) and least hand hygiene was reported before entering isolation room 2.69(53.8%). This is also the same situation for both public and private hospital's health care professionals. Result of each label score for each hand hygiene questions is shown in (table 8).

Table 6: Overall hand hygiene practice of respondents in general hospitals in Addis Ababa, Ethiopia, 2017

How often you clean your hand	Possible Answer				
	Never Count (%)	**Sometime** Count (%)	**Half of the time** Count (%)	**Most of the time** Count (%)	**Always** Count (%)
After going to the toilet	4(0.6)	55(8.4)	112(17.2)	200(30.7)	280(43.0)
Before caring for a wound	93(14.3)	119(18.3)	151(23.2)	135(20.7)	153(23.5)
After caring for a wound	3(0.5)	22(3.4)	74(11.4)	202(31.0)	350(53.8)
After touching potentially contaminated Objects	4(0.6)	23(3.5)	51(7.8)	172(26.4)	401(61.6)
After contact with blood/ body fluids	3(0.5)	30(4.6)	62(9.5)	156(24.0)	400(61.4)
After inserting an invasive device.	12(1.8)	76(11.7)	132(20.3)	173(26.6)	258(39.6)
Before entering an isolation room.	192(29.5)	154(23.7)	95(14.6)	84(12.9)	126(19.4)
After contact with a patient's skin.	32(4.9)	132(20.3)	143(22.0)	125(19.2)	219(33.6)
After exiting an isolation Room.	152(23.3)	119(18.3)	99(15.2)	104(16.0)	177(27.2)
Before endotracheal Suctioning.	47(7.6)	103(16.7)	159(25.8)	139(22.5)	169(27.4)
After contact with a patient's secretions	5(0.8)	25(3.8)	65(10.0)	166(25.5)	390(59.9)
Before patient contact	135(20.7)	194(29.8)	120(18.4)	100(15.4)	102(15.7)
After removing gloves	8(1.2)	44(6.8)	76(11.7)	236(36.3)	287(44.1)
If they look or feel dirty	8(1.2)	21(3.2)	35(5.4)	119(18.3)	468(71.9)

Table 7: Mean hand hygiene practice of respondents in general hospital in Addis Ababa, Ethiopia, 2017

How often do you clean your hand	Owner of hospital		Total **Mean (s.e.m)**	%
	Public Mean(s.e.m)	**Private** Mean(s.e.m)		
After going to the toilet	4.04(0.053)	4.10(0.057)	4.07(0.039)	81.4
Before caring for a wound	2.84(0.074)	3.55(0.072)	3.21(0.053)	64.2
After caring for a wound	4.23(0.050)	4.45(0.043)	4.34(0.033)	86.8
After touching potentially contaminated Objects	4.40(0.048)	4.50(0.045)	4.45(0.033)	89.6
After contact with blood/ body fluids	4.31(0.052)	4.51(0.045)	4.41(0.034)	88.2
After inserting an invasive device.	3.70(0.064)	4.10(0.057)	3.90(0.043)	78.0
Before entering an isolation room.	2.45(0.079)	2.92(0.084)	2.69(0.058)	53.8
After contact with a patient's skin.	3.51(0.070)	3.61(0.071)	3.56(0.050)	71.2
After exiting an isolation Room.	2.84(0.084)	3.25(0.085)	3.05(0.060)	61.0
Before endotracheal Suctioning.	3.32(0.072)	3.58(0.071)	3.45(0.051)	69.0
After contact with a patient's secretions	4.30(0.051)	4.49(0.046)	4.40(0.034)	88.0
Before patient contact	2.63(0.075)	2.87(0.075)	2.75(0.053)	55.0
After removing gloves	4.05(0.052)	4.25(0.053)	4.15(0.038)	83.0
If they look or feel dirty.	4.52(0.046)	4.60(0.046)	4.56(0.033)	91.2
Overall	3.66(0.041)	3.92(0.041)	3.79(0.029)	75.8
Good Practice (count (%))	179(56.6)	149(44.5)	328(50.4)	
Low practice (count (%))	137(43.4)	186(55.6)	323(49.6)	

5.7 Bivariate analysis of factors associated with hand hygiene practice

5.7.1 Bivariate analysis of hand hygiene practice with socio-demographic characteristics

On bivariate analysis of hand hygiene practice with socio demographic variable; sex, age, work experience didn't show significant association.

The odds of hand hygiene practice were 1.63 times higher for those who were working in public hospitals (COR [95%CI]) = 1.63 (1.197, 2.223) than private hospitals. The odds of hand hygiene practice of laboratory profession (COR [95%CI]) = 0.35[0.140, 0.892] were 64.6% lower when we compare with health officer and Anesthesiologist. Hand hygiene practice of those with educational level of first degree (COR [95%CI]) = 0.58 (0.346, 0.963) were 42.3% likely reduced than diploma holders. When we compare with those working in laboratory department, those who were working in; medical ward (COR [95%CI]) =2.35 (1.120, 4.943), Gyn/obs (COR [95%CI]) =2.67 (1.217, 5.843), OPD (COR [95%CI]) = 5.43 (2.406, 12.247), emergence (COR [95%CI]) =1.31 (1.306, 6.707) were 2.35 times, 2.67 times, 5.43 times, 1.31 times respectively practicing hand hygiene higher. The odd of hand hygiene practice of health care professional with good attitude (COR [95%CI]) =1.76(1.287, 2.399) were 1.76 times higher than those with low attitude.

Table 8: Bivariate analysis on association of hand hygiene practice with socio demographic variable of respondents in general hospital in Addis Ababa, Ethiopia, 2017

Variables	Hand hygiene practice		COR(95% of CI)
	Good(>=3.79) Count (%)	**Poor(<3.79)** Count (%)	
Owner of hospital			
Public	179(54.6)	137(42.4)	1.63 (1.197, 2.223)**
Private	149(45.4)	186(57.6)	1
Sex of respondent (n=650)			
Male	114(55.6)	91(44.4)	1.35 (0.970, 1.885)
Female	214(48.1)	231(51.9)	1
Age of respondent (n=639)			
<=32 years	202(48.8)	212(51.2)	1.2 (1.660, 1.660)
>32 years	120(53.3)	105(46.7)	1
Profession of respondent(n=651)			
Doctor	76(59.4)	52(40.6)	1.11 (0.531, 2.334)
Nurse	189(47.4)	210(52.6)	0.69 (0.348, 1.353)

Midwifery	29(63.0)	17(37.0)	1.3 (0.537, 3.146)
Laboratory	13(31.7)	28(68.3)	0.35 (0.140, 0.892) *
Another	21(55.95)	16(44.05)	1
Educational Level(n=651)			
Diploma	89(47.1)	100(52.9)	1
First degree	185(49.6)	188(50.4)	0.58 (0.346, 0.963)*
Master and above	54(60.7)	35(39.3)	0.64 (0.398, 1.022)
Work experience(n=636)			
<=8 years	200(49.3)	206(50.7)	1.1 (0.799, 1.526)
>8 years	119(51.7)	111(48.3)	1
Working department(n=651)			
Medical	60(54.1)	51(45.9)	5.43(2.406, 12.247)**
Surgical	39(43.8)	50(56.2)	2.67 (1.217, 5.843)*
OR	34(41.5)	48(58.5)	1.5 (0.638, 3.528)
OPD	57(73.1)	21(26.9)	2.35 (1.120, 4.943)*
Gyn/ob	44(57.1)	33(42.9)	1.56 (0.725, 3.356)
Emergence	37(59.7)	25(40.3)	1.13 (0.493, 2.581)
ICU	22(36.1)	39(63.9)	1.31(1.306, 6.707)**
Pediatrics	21(42.9)	28(57.1)	1.42 (0.651, 3.083)
Laboratory	14(33.3)	28(66.7)	1
Attitude			
Good	187(57.0)	181(56.0)	1.76(1.287, 2.399)**
Low	41(43.0)	142(44.0)	1
Knowledge			
Good	199(60.7)	151(46.7)	0.96 (0.705, 1.310)
Low	129(39.3)	172(53.3)	1

* Significant at p-value <0.05, **Significant at p-value <0.01

5.7.2. Bivariate analysis of hand hygiene practice respondents with administrative characteristics

On bivariate analysis most of administrative characteristics have significant association with hand hygiene practice of health care professionals. The odd of hand hygiene practice of health care professionals who said leaders and senior manager of the hospital committed to support and openly promote hand hygiene (COR [95%CI]) =1.52(1.089, 2.114) were 1.52 times higher than who said no, those who know functionality of infection prevention committee (COR [95%CI]) =2.14(1.479, 3.091) were practice hand hygiene 2.138 times higher, those who said there is monitoring and evaluation system on hand hygiene compliance in the hospital (COR [95%CI]) =1.63(1.196, 2.221) were practice hand hygiene 2.138 times higher than who said no, those who said there is regular feedback on hand hygiene performance from their cloth supervisor (COR [95%CI]) =1.74(1.256,2.408) were practice hand hygiene 1.74 times higher than who said no, those who said there is motivation for compliance to hand hygiene(COR[95%CI])=1.89(1.36,2.61) were practice hand hygiene 1.89 times higher than who said no

Table 9: Bivariate analysis on association of hand hygiene practice of respondents with administrative characteristics of the hospitals in general hospital; Addis Ababa, Ethiopia, 2017

Variable		Hand hygiene practice		COR(95% of CI)
		Good(>=3.79) Count (%)	Poor(>=3.79) Count (%)	
knowing that the hospital have budget for infection prevention activities	Yes	285(86.9)	294(91.0)	0.65(0.397, 1.076)
	No	43(13.1)	29(9.0)	1
Knowing leaders and senior managers at the hospital committed to support and openly promote hand hygiene	Yes	208(63.4)	234(72.4)	1.52(1.089, 2.114)*
	No	120(36.6)	89(27.6)	1
Taken training on hand hygiene within past two year	Yes	192(58.5)	185(57.3)	0.95(0.696,1.296)
	No	136(41.5)	138(42.7)	1
Knowing presence of infection prevention committee in the hospital.	Yes	263(80.2)	286(88.5)	1.91(1.234,2.957)**
	No	65(19.8)	37(11.5)	1
Knowing functionality of infection prevention committee in the hospital.	Yes	65(19.8)	37(11.5)	2.14(1.479,3.091)**
	No	159(48.5)	219(67.8)	1
Presence of monitoring and evaluation system on hand hygiene compliance in your hospital	Yes	146(44.5)	183(56.7)	1.63(1.196, 2.221)**
	No	182(55.5)	140(43.3)	1
Presence of regularly feedback on your hand hygiene performance from cloth supervisor.	Yes	95(29.0)	134(41.5)	1.74(1.256,2.408)**
	No	233(71.0)	189(58.5)	1
Présence of motivation for compliance to hand hygiène practice in the hospital	Yes	98(29.9)	144(44.6)	1.89(1.368,2.607)**
	No	230(70.1)	179(55.4)	1

* Significant at p-value <0.05, **Significant at p-value <0.0

5.6.3 Bivariate analysis of hand hygiene practice respondents with availability of hand hygiene facilities

The odd of hand hygiene practice were 2.69 times higher for those who said sink is available in the working area (COR [95%CI]) = 2.69 (1.278, 5.683) than who said no, those who said water is available of in the working area (COR [95%CI])= 3.06 (2.013, 4.647) were practice hand hygiene 3.06 time higher, those who said soap is available in the working area (COR [95%CI])= 2.23 (1.533, 3.257) were practice hand hygiene 2.23 time higher, those who said towel\tissue paper is available in the working area (COR [95%CI])= 1.52(1.105, 2.094) were practice hand hygiene 1.52 time higher, those who said hand hygiene guide line is available in the working area (COR [95%CI])= 1.63 (1.194, 2.221) were practice hand hygiene 1.63 time higher, those who said Hand hygiene posters are displayed at their working department/ward as reminders (COR [95%CI])= 1.79 (1.318, 2.426) were practice hand hygiene 1.79 time higher. Bivariate analysis of association of hand hygiene practice with availability of hand hygiene facility in general hospital is summarized in (Table 10).

Table 10: Bivariate analysis of hand hygiene practice of respondents with availability of hand hygiene facility in general hospital in Addis Ababa, Ethiopia, 2017

Variables		Hand hygiene practice		COR(95% of CI)
		Good(>=3.79) Count (%)	Poor(>=3.79) Count (%)	
Availability of sink in the working dep.t	Yes	302(92.1)	313(96.9)	2.69 (1.278, 5.683)**
	No	26(7.9)	10(3.1)	1
Functionality of sink	Yes	260(85.8)	297(94.9)	3.07 (1.689, 5.580)**
	No	43(11.2)	16(5.1)	1
Availability of running water in the working ward/department	Yes	235(71.6)	286(88.5)	3.06 (2.013, 4.647)**
	No	93(28.4)	37(11.5)	1
Availability of soap in the working ward/department	Yes	228(69.5)	270(83.6)	2.23 (1.533, 3.257)**
	No	100(30.5)	53(16.4)	1
Is alcohol based hand rub available in the working ward/department	Yes	259(79.0)	267(82.7)	1.27 (0.858, 1.879)
	No	69(21.0)	56(17.3)	1
Towel\tissue paper availability in the your working ward/dep.t	Yes	107(32.6)	137(42.4)	1.52 (1.105, 2.094)*
	No	221(67.4)	186(57.6)	1
Glove availability in the working ward /dep.t?	Yes	258(78.7)	253(78.3)	0.98 (0.675, 1.425)
	No	70(21.3)	70(21.7)	1
Hand cream / lotions availability in the dept?	Yes	80(24.4)	100(31.0)	1.39 (0.984, 1.963)
	No	248(75.6)	223(69.0)	1
Hand hygiène guide line availability in your woking ward/dep.t?	Yes	134(40.9)	171(52.9)	1.63 (1.194, 2.221)**
	No	194(59.1)	152(47.1)	1
Do hand hygiene posters are displayed at your working department as reminders	Yes	177(54.0)	223(69.0)	1.79 (1.318, 2.426)**
	No	148(45.1)	99(31.0)	

* Significant at p-value <0.05, **Significant at p-value <0.01

5.8. Multi variable analysis of hand hygiene practice of respondents with associated factors

To avoid excessive number of variables with p value <0.25 during the bivariate analysis were included in the multivariate logistic regression analysis to see the relative effect of confounding variables. Accordingly after managing for covariates only educational level, working department, attitude, functionality of sink, availability of running water, knowing functionality of infection prevention committee and availability of hand hygiene guide line were significantly associated with hand hygiene practice of health care professionals.

The odds of hand hygiene practice of those master and above holders (AOR (95% of CI)) = 0.46 (0.258, 0.839) were 53.5% less than diploma holders and those first degree holders (AOR (95% of CI)) = 0.43 (0.230, 0.819) were 56.6% less than diploma holders. Health care professionals working in medical ward (AOR (95% of CI**)** = 2.61(1.110, 6.143), surgical ward (AOR (95% of CI**)** = 4.83 (2.074, 11.253), emergency department (AOR (95% of CI**)** = 2.450 (1.148, 5.232) were 2.61 times, 4.83times, 2.45 times respectively practice hand hygiene higher than those working in laboratory department. Those with Good attitude (AOR (95% of CI) = 1.61 (1.087, 2.381) were practice hand hygiene 1.61 times higher than those with low attitude. Those who know functionality of infection prevention committee (AOR [95%CI]) =1.57(1.035, 2.376) do practice hand hygiene 1.57 times higher than who didn't know. The odds of hand hygiene practice of health care professional who said sink is functional (AOR (95% of CI)) = 2.26 (1.070, 4.792) were 2.26 times higher than who said not available. Those who reported running water is available (AOR (95% of CI)) = 1.86 (1.011, 3.432) were practice hand hygiene 1.86 times higher than those who said not available. Similarly, the odds of hand hygiene practice of those who reported hand hygiene guide line is available in the working area (AOR (95% of CI)) = 1.66 (1.134, 2.427) were 1.66 times higher than who said no. Summary of model logistic regression is depicted in (Table 11).

Table 11: Summary of logistic regression analysis of hand hygiene practice of respondents with selected variables in general hospital in Addis Ababa, Ethiopia, July 2017

Variables	Hand hygiene practice		COR(95% of CI)	AOR(95% of CI)
	Good(>=3.79) Count (%)	Poor(>=3.79) Count (%)		
Educational level of respondent				
Diploma	89(47.1)	100(52.9)	1	
First degree	185(49.6)	188(50.4)	0.58 (0.346, 0.963)*	0.43 (0.230, 0.819)*
Master and above	54(60.7)	35(39.3)	0.64 (0.398, 1.022)	0.465(0.258, 0.839)*
Working department				
ICU	22(36.1)	39(63.9)	1.31(1.306, 6.707)**	1.15 (0.442, 2.994)
Medical	60(54.1)	51(45.9)	5.43(2.406, 12.247)**	2.61(1.110, 6.143)*
Surgical	39(43.8)	50(56.2)	2.67 (1.217, 5.843)*	4.83 (2.074, 11.253)**
OR	34(41.5)	48(58.5)	1.5 (0.638, 3.528)	2.24 (0.998,5.017)
Pediatrics	21(42.9)	28(57.1)	1.42 (0.651, 3.083)	1.31 (0.525,3.269)
Gyn/ob	44(57.1)	33(42.9)	1.56 (0.725, 3.356)	1.67(0.760, 3.688)
OPD	57(73.1)	21(26.9)	2.35 (1.120, 4.943)*	1.51 (0.681, 3.330)
Emergence	37(59.7)	25(40.3)	1.13 (0.493, 2.581)	2.45 (1.148, 5.232)*
Laboratory	14(33.3)	28(66.7)	1	
Attitude toward hand hygiene				
Good	187(57.0)	181(56.0)	1.76(1.287, 2.399)**	1.61 (1.087, 2.381)*
Low	141(43.0)	142(44.0)	1	
Do you know that infection prevention committee is functional?				
Yes	65(19.8)	37(11.5)	2.14(1.479,3.091)**	1.57(1.035, 2.376)*
No	159(48.5)	219(67.8)	1	
Is sink functional				
Yes	260(85.8)	297(94.9)	3.07 (1.689, 5.580)**	2.26 (1.070, 4.792)*
No	43(11.2)	16(5.1)	1	
Is running water available in your working ward/department				
Yes	235(71.6)	286(88.5)	3.06 (2.013, 4.647)**	1.86 (1.011, 3.432) *
No	93(28.4)	37(11.5)	1	
Is hand hygiene guide line available in your working ward/dep.t?				
Yes	134(40.9)	171(52.9)	1.63 (1.194, 2.221)**	1.66 (1.134,2.427)**
No	194(59.1)	152(47.1)	1	

* Significant at p-value <0.05, **Significant at p-value <0.01

6. DISCUSSION

Hand hygiene is one of standard precaution which is considered to be the primary measure necessary for reducing HCAI. It contributes significantly to keeping patients safe. So this study is aimed to assess compliance of health care professionals with hand hygiene practice and associated factors in general hospitals in Addis Ababa to contribute its own evidence on current literatures. So that this study shows that the overall good hand hygiene practice was low and most of health care professional practice hand hygiene when their hands look or feel dirty.

The result of this study show that the overall self-reported good hand hygiene compliance was 50.4% which is lower than study done in north India with total compliance of 86.0% (25) . The reason might be due to heath status difference between the two study places. In other way result of this study is higher than study done in Jimma university hospital which showed only 43.2% of staff practice adequate hand washing while 56.8% of them practice in adequate hand washing (16). The difference might be the latter studies were done before 4 years which mean that there might be same change on quality of health service was implemented.

Hand hygiene compliance of health care professionals of the two groups was different; those from public hospitals comply 56.6% which is higher than private hospitals. This study is similar with study done at Bahir dar city which was health care worker of public health institution were more compliant than private one. In another way this study is different from study done in north India which was private hospital were more compliant than public one (21). The difference might be in India many private hospitals give services to many people came from abroad which force them to keep quality.

This study show that, out of hand hygiene practice opportunities heath care professionals show more compliant if there hand look or feel dirty (91.2%), after touching potentially contaminated objects (89.6%), after contact with blood or blood fluid (88.2), after contact with a patient's secretions (88.0%) and after caring for a wound (86.8%). This study is similar with many studies done previously in different places; study done in Nigeria (15), study done in Behir dar city (17), a review study (26), study done in Turkey (20), study done in Mekele city (19). Similarly this hand hygiene practice opportunities was higher for both groups (public and private) of this study.

In other way, health care professional show low hand hygiene compliance in opportunities like before entering an isolation room (53.8%), before patient contact (55.0%), after existing an isolation room. This is supported with studies done previously at Mekele (19), India (25) .But in contrast one study show that health care worker were more compliant with hand hygiene practice before touching patient, before

aseptic procedure (28). The difference might be the later study was done in health care institutions which have strong rule and regulation on patient safety.

Based on the diverse nature of factors, WHO (2009) stresses that successful HH improvement requires multiple strategies to address the different barriers. Among strategies identified by the world health organization as critical components of programs aimed to improve HH; workplace reminders, training and education, evaluation and feedback play a major role (32). However, result of this study show no significant association of hand hygiene practice with these three variables in multivariate analysis. This might be due to not emphasis was given in performing this activities.

Finding from this study show that there was significant association between hand hygiene practice and educational level of heath care professionals with diploma holders practice more than first degree and master/above holders. This is support by study done at Gonder and Debre markos hospitals with nurses who have diploma were about 2 times more likely to practice surgical site infection prevention activities as compared to those who have bachelor degree or higher (34).

Finding from this study show that there was significant association between hand hygiene practice and department/ward they are working in with health care professionals working in medical ward, surgical ward, emergency department respectively practice hand hygiene higher than those working in laboratory department. This study is different from study done in mekele which show those working in laboratory department comply more (19). The difference might be in latter study SLMTA (strengthening laboratory management transaction towards accreditation) system applied.

Among factors which may affect hand hygiene practice attitude of health care professional to ward hand hygiene and health care acquired infection play its own role. This study also show that hand hygiene practice was positively associated with attitude of health care professional which show that those with Good attitude were practice hand hygiene 1.76 times higher than those with low attitude. This is similar with result of study done in Nigeria which those with Good attitude comply more (15).

Study done at mekele town on standard precaution show that type of health care professionals was statistically significant with practice of standard precaution (19). However result of this study show that there is no significant association was observed between professions and hand hygiene practice. The reason might be on former one health care workers emphasis on this issue in there working team.

Analysis of this study show that health care professional who know Presence and functionality of infection prevention committee was positively associated with hand hygiene compliance. This show that those who know functionality of infection prevention committee in there hospital practice more. This study is consistent with study done at Gondar university hospital (35). Similarly this study show that hand hygiene practice was positively associated with functionality of hand washing sink and availability of running water which is consistent with study done at Bahir dar city (17), study done at Tikur Anbessa (Black Lion) Hospital and St. Paul's Hospital in Addis Ababa (18). In addition, this study show that availability of written hand hygiene guide line at working place were positively associated with hand hygiene practice of health care professionals. It is similar with study done at mekele special zone were HCWs working in the rooms having written material for risk communication had 1.8 times increase the likelihood of practicing standard precautions than HCWs working in rooms without written material (19).

7. Strength and limitation

7.1 Strength

- Standard tool which developed by world health organization was used.
- The study tried to include most of departments/wards in the hospitals
- Adequate sample size was used to answer objectives

7.2 Limitation

- The study assessed self-reported compliance which is vulnerable to over or under estimation of their compliance.

8. Conclusion and recommendation

Conclusion

According to this study good hand hygiene practice is low. Compliance of health care professionals with hand hygiene practice was reported high when health care professional feel dirty, contact with potentially contaminated objects, and low before entering isolated room, before patient contact which indicate that low emphasis was given for patient safety, this show that patients are at high risk of acquiring nosocomial infection This study show that educational level, working department/ward, attitude toward hand hygiene and health care acquired infections, functionality of sink, availability of running water, knowing functionality of infection prevention committee and availability of hand hygiene guide line are determinant factors for hand hygiene practice.

Recommendation

For health bureau

- Should strength clean care by focusing on patient safety

For hospital Administrations

- Hospital administrations should work to increase Good attitude of health care professional to ward hand hygiene and health care acquired infection.
- Hospital must work to increase availability of water in the working area.
- Infection prevention committee in the hospitals must communicate with health care professionals in order to initiate health worker to practice more.

For health care professionals

- Health care professionals must strength their hand hygiene practice.

For researchers

- Researchers should further study by using observational or experimental methods.

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ANNEX

Annex -I: English version questionnaire

1. Information sheet

Hello, I am _____ this is an interview to be done with you for a study that is being conducted by Addis Ababa University, department of Master of Public Health. I would like to ask you few questions and your willingness in the study. This study is prepared to obtain relevant information about the compliance of health care professional to hand hygiene practice at general hospital in Addis Ababa. Your participation in the study is very important in reducing nosocomial infection, morbidity and mortality rate, which is caused by non-compliance to hand hygiene practice.

Title of the study: Compliance of health care professional with hand hygiene practice and its associated factors among public and private general hospital in Addis Ababa, Ethiopia

Objective of the study: To compare compliance of health care professionals with hand hygiene practice and its associated factors among public and private general hospital in Addis Ababa, Ethiopia.

Confidentiality and Rights of the participant: Your name & address will not be written in this form and will never be used in connection with any information you tell us. All the information given by you will be kept strictly confidential and only used for this study. Your participation is voluntary, the study imposes no risk and no compensation will be provided to you and you are not obligated to answer any question which you do not wish to answer. If you fill discomfort to respond to any of the question, please fill free to drop it any time you wish to do so. Thank you in advance for your participation in the study.

2. Informed consent

I have read all the process and the objective of the study and I have understood the same as written. I understood that the study imposes no risk and no compensation would be provided to me.

Could I have your permission to continue?

1. Yes
2. No. Stop the interview and thank the respondent.

Data collector: Name_____

Result: Questionnaire completed _____

Questionnaire partially completed _____

Checked by Supervisor or PI_____

Supervisor's Signature _____ Date _____

If you have question, please contact us. Tel:- +251916586603, Email: - ziyadahm1982@gmail.com

Direction: Circle on number in front of your answer

Part one. Socio-demographic characteristics which may affect hand hygiene compliance

S.no	Questions	Response	
1.	Owner of hospital	Public----------1 Private----------2	
2.	Age	In Years----------	
3.	Sex	Male----------1	
		Female----------2	
4.	Profession	General Practitioner----------1	
		Gynacologist----------2	
		pedatrician----------3	
		Cardiologist----------4	
		Anesthesiologist----------5	
		Surgeon----------6	
		Internist----------7	
		Nurse----------8	
		Midwifery----------9	
		Health Officer----------10	
		Laboratory----------11	
		Pharmacist/druggist----------12	
		Another----------	
5.	Educational level	Diploma----------1	
		First degree----------2	
		Masters and above----------3	
6.	Work experience	In years----------	
7.	Department/ward you are working in	Intensive care unite----------1	
		Medical----------2	
		surgical ----------3	
		Pediateric----------4	
		Gyn./obs----------5	
		OR----------8	
		Delivery----------9	
		Laboratory----------10	
		TB room----------11	
		Emargenceye----------12	
		OPD----------13	
		Another----------	

PART TWO: - Question related to Hand hygiene knowledge

: - Circle on number in front of your answer

S.no	Questions	Possible response
1.	Hand hygiene is the primary measure to reduce health care acquired infection	Yes---------- 1 No---------- 2 I don't know---------- 3
2.	Alcohol-based hand rubs should not be used when hands are visibly soiled	Yes---------- 1 No---------- 2 I don't know---------- 3
3.	Alcohol-based hand rubs will still be effective if applied for less than 60 seconds	Yes---------- 1 No---------- 2 I don't know---------- 3
4.	Hand hygiene is required following the removal of gloves after patient contact	Yes---------- 1 No---------- 2 I don't know---------- 3
5.	Single-use cloth towels and paper towels are acceptable for drying hands in patient care areas.	Yes---------- 1 No---------- 2 I don't know---------- 3
6.	Hand hygiene must be performed before patient contact, following patient contact, and prior to and following care wound.	Yes---------- 1 No---------- 2 I don't know---------- 3
7.	When using an alcohol-based hand rub to decontaminate hands they should be rubbed together until dry.	Yes---------- 1 No---------- 2 I don't know---------- 3
8.	Compliance to hand hygiene practice can reduce chance of spreading of infection	Yes---------- 1 No---------- 2 I don't know---------- 3
19.	Hand creams and lotions are recommended for health care workers hands.	Yes---------- 1 No---------- 2 I don't know---------- 3
10.	Gloves should not be reused when caring for different patients.	Yes---------- 1 No---------- 2 I don't know---------- 3
11.	Microbes causing HCAI are most frequently spread between patients on the hands of health-care workers.	Yes---------- 1 No---------- 2 I don't know---------- 3
12	Performing hand hygiene after caring for a wound can protect from health care acquired infections.	Yes---------- 1 No---------- 2

		I don't know---------- 3

PART THREE: - Question related to hand hygiene Attitude (Please circle one of the option provided to indicate your response)

S. no	Statement	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1.	The facilities in which I am working in emphasize the importance of hand hygiene.	**1**	**2**	**3**	4	**5**
2.	The importance of hand hygiene is emphasized by my clinical supervisors.	**1**	**2**	**3**	4	**5**
3.	I have a duty to act as a role model for other health Care workers.	**1**	**2**	**3**	4	**5**
4.	When busy it is more important to complete my tasks than to perform hand hygiene.	**1**	**2**	**3**	4	**5**
5.	Performing hand hygiene in the recommended Situations can reduce patient mortality.	**1**	**2**	**3**	4	**5**
6.	Performing hand hygiene in the recommended situations can reduce medical costs associated with health care-acquired infections.	**1**	**2**	**3**	4	**5**
7**.**	I can't always perform hand hygiene in recommended situations because my patient's needs come first.	**1**	**2**	**3**	4	**5**
8.	Prevention of health care-acquired infection is a valuable part of a health care worker's role.	**1**	**2**	**3**	4	**5**
9.	I follow the example of senior Health care professionals when deciding whether or not to perform hand hygiene	**1**	**2**	**3**	4	**5**
10.	An infectious disease contracted in the health care setting may threaten my life or my career	**1**	**2**	**3**	4	**5**
11.	I believe I have the power to change poor hand hygiene practices in the workplace	**1**	**2**	**3**	4	**5**
12.	Failure to perform hand hygiene in the recommended situations can be considered negligence	**1**	**2**	**3**	4	**5**
13.	Hand hygiene is a habit for me in my personal life	**1**	**2**	**3**	4	**5**
14.	I am confident I can effectively apply my Knowledge of hand hygiene to my clinical practice	**1**	**2**	**3**	4	**5**
15.	It is an effort to remember to perform hand Hygiene in the recommended situations	**1**	**2**	**3**	4	**5**
16.	I would feel uncomfortable reminding a health Professional to hand wash	**1**	**2**	**3**	4	**5**
17.	Performing hand hygiene slows down building Immunity to disease.	**1**	**2**	**3**	4	**5**

18	I belief that among all patient safety hand hygiene very important.	**1**	**2**	**3**	4	**5**
19.	Dirty sinks can be a reason for not washing hands	**1**	**2**	**3**	4	**5**
20.	Lack of an acceptable soap product can be a reason for not cleansing hands.	**1**	**2**	**3**	4	**5**
21.	Hand washing agent cause irritation and dryness is the reason for not cleaning my hand	**1**	**2**	**3**	4	**5**
22.	Too busy/insufficient time is the reason for not cleaning my hand.	**1**	**2**	**3**	4	**5**
23.	If we use glove it is not necessary to wash our hand	**1**	**2**	**3**	4	**5**
24.	Forgetfulness is reason for not washing my hand	**1**	**2**	**3**	4	**5**

Part four: - Questions related to administrative characteristic which may affect hand hygiene practice (**Circle on number in front of your answer**)

s.no	Questions	Possible response	Skip
1.	Is your hospital have budget for infection prevention activities?	Yes----------1	
		No----------2	
2	Are leaders and senior managers at your hospital committed to support and openly promote hand hygiene?	Yes----------1	
		No----------2	
3	Have you taken training on hand hygiene within past two year?	Yes----------1	
		No----------2	
4	Is there infection prevention committee in your hospital?	Yes----------1	
		No----------2 →	6
5	If Q (no.5) is yes do you know that it is functional?	Yes----------1	
		No----------2	
6	Is there any monitoring and evaluation system on hand hygiene compliance in your hospital?	Yes----------1	
		No----------2	
7	Is there regularly feedback on your hand hygiene performance from your cloth supervisor?	Yes----------1	
		No----------2	
8	Is there any motivation for compliance to hand hygiene in your hospital?	Yes----------1	
		No----------2	
9	If there are another administrative factors in the hospital that affect hand hygiene practice please explain----------		

Part five: - Questions related to availability of hygiene facilities in working area which may affect hand hygiene practice (**Circle on number in front of your answer**)

s.no	Questions	Possible response	Skip
1	Is sink availability in your working dep.t	Yes----------1	
		No----------2 →	3
2	If Q (no.1) is yes is sink functional	Yes----------1	
		No----------2	
3	Is running water available in your working ward/department	Yes----------1	
		No----------2	
4	Is soap available in your working ward/department	Yes----------1	
		No----------2	
5	Is alcohol based hand rub available in your working ward/department	Yes----------1	
		No----------2	
6	Is towel\tissue paper available in your working ward/dep.t	Yes----------1	
		No----------2	
7	Is glove available in your working ward /dep.t?	Yes----------1	
		No----------2	
8	Is Hand creams and lotions available in your dept.?	Yes----------1	
		No----------2	
9	Is hand washing guide line availability in your working ward/dep.t?	Yes----------2	
		No----------2	
10	Is Hand hygiene posters are displayed at your working department as reminders?	Yes----------1	
		No----------2	

11	If there are another factors in the hospital that related to availability and accessibility of hand hygiene facilities that affect hand hygiene practice please explain---------- ----------

PART SIX: - Question related to hand hygiene practice

:- (Please circle one of the option provided to indicate your response)

S.no	**Questions** **Do you clean your hand**;	**Never**	**Some time**	**Half of the time**	**Most of the time**	**Always**	**N.A**
1.	After going to the toilet	1	2	3	4	5	6
2.	Before caring for a wound	1	2	3	4	5	6
3.	After caring for a wound	1	2	3	4	5	6
4.	Afte touching potentially contaminated Objects	1	2	3	4	5	6
5.	After contact with blood/ body fluids	1	2	3	4	5	6
6.	After inserting an invasive device.	1	2	3	4	5	6
7**.**	Before entering an isolation room.	1	2	3	4	5	6
8.	After contact with a patient's skin.	1	2	3	4	5	6
9.	After exiting an isolation Room.	1	2	3	4	5	6
10.	Before endotracheal Suctioning.	1	2	3	4	5	6
11.	After contact with a patient's secretions	1	2	3	4	5	6
12.	Before patient contact	1	2	3	4	5	6
13.	After removing gloves	1	2	3	4	5	6
14.	If they look or feel dirty.	1	2	3	4	5	6

N.A – Not Applicable

---- THANK YOU FOR PARTCIPATION-----

Annex2 -: Amharic version questionnaire

1. የመረጃ መስጫ ቅፅ

ጤና ይስጥልኝ, እኔ _____ እባላለሁ የመጣውት ከአዲስ አበባ ዩኒቨርስቲ ጤና ሣይንስ ኮሌጅ የህብረተሰብ ጤና አጠባበቅ ትምህርት ክፍል ሲሆን የመጣሁበት ምክንያት ለጥናት የሚሆኑ መረጃዎችን ለማሰባሰብ፡፡ በዚ ጥናት ላይ ለመሳተፍ ፍቃደኝነቶት እና ትንሽ ጥያቄ ለመጠየቅ ነዉ፡፡ ይህ ጥናት የተዘጋጀዉ በአዲስ አባባ ከተማ አስተዳደር ዉስጥ ባሉት በአጠቃላይ ሆስፒታለሎች ላይ የጤና ባለሙያዎች የእጅ መታጠብ ተግባራቸዉ ላይ አስፈላጊዉን መረጃ ለማሰባሰብ ነዉ፡፡ በዚ ጥናት ዉስጥ የናንተ ተሳትፎ በጤና ተቋማት ዉስጥ እጅን በአግባቡ ባለመታጠብ የሚከሰቱትን በሽታዎች፤ የህመም መጠን እና ሞት ለመቀነስ ይረዳል፡፡

የጥናቱ ርዕስ፡ በአዲስ አባባ ጠቅላላ ሆስፒታሎች እጅን በአግባቡ የመታጠብ እና ተዛማች ማንስኤዎችን ለማመዛዘን ነዉ፡፡

የጥናቱ አላማ: በአዲስ አባባ ከተማ ጠቅላላ ሆስፒታሎች ላይ የጤና ባለሙያዎች በአግባቡ የእጅ የመታጠብ ተግባራቸዉን እና ተዛማች ማንስኤዎችን ለማመዛዘን ነዉ፡፡

ሚስጥር ጠባቂነት እና የተሳታፊዎች መብት : የናንተ ስም ና አድራሻ በዚ ቅፅ ላይ አይፃፍም በተጨማሪም እናንተ ከምትነግሩን ከማንኛዉም መራጃ ጋር አናገናኝም፡፡ ሁሉም እናንተ የምትሰጡን መረጃ ምስጥራዊነቱ የተጠበቀ ነዉ እና ለዚ ጥናት ብቻ ነዉ የምንጠቀመዉ፡፡ በዚ ጥናት ዉስጥ መሳተፍ በፍላጎት ነዉ፤ ለመመለስ የማትፈልጉትን ጥያቄ እንድትመልሱ አትገደዱም፡፡በዚ ጥናት ዉስጥ መሳተፍ በፍላጎት ነዉ፤ ለመመለስ የማትፈልጉትን ጥያቄ እንድትመልሱ አትገደዱም፡፡ በጥናቱ ላይ ለተሳታፊዊነቶ በጣም እናመሰግናለን፡፡

2.የተሳታፊነት ፍቃደኝነት ማረጋገጫ

ሁሉንም ነገር በማንበብ እና ጥናቱን አላማ በተፃፈዉ ልክ ገብቶኛል፡፡ጥናቱ ምንም አይነት አደጋ እኔ ላይ እንደማያደርስ እና ለመሳተፍ ምንም አይነት ክፍያ እንዳለለዉ ገብቶኛል፡፡

ለመቀጠል ፍቃደኛ ኖት?

1. አዎ
2. አይደለዉም:: በማመስገን ቃለምልልሱን የቁሙ፡፡

የመረጃ ሰብሳቢ ስም: _____

ዉጤት:-መጠይቁ ሙሉ በሙሉ ተሞልቷል _____

:- መጠይቁ ሙሉ ለሙሉ አልተሞላም _____

በሱፐርቫይዘር/PI ቼክ ተደርጓል: ሲም _____

የሱፐርቫይዘሩ ፊርማ _____ ቀን _____

ጥያቄ ወዱንም ግልፅ ያልሆነለት ነገር ካለ በሚከተሉት አድራሻ መጠየቅ ይችላሉ፡፡

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ኢሜል ፡ ziyadahm1982@gmail.com

ክፍል አንድ. መስረታዊ መረጃዎችን የተመለከቱ ጥያቄዎች

አቅጣጫ: በማንበብ በተሰጡት ሁኔታ መልሶን ይመልሱ

ተ.ቁ	ጥያቄ	መልስ	
ነ.	የሆስፒታሉ ባለቤትነት	የመንግስት----------ነ	
		የግል----------2	
2	እድሜ	በ አመት----------	
3	ጾታ	ወንድ----------1	
		ሴት----------2	
4.	የተማሩት የትምህርት አይነት	General Practitioner----------1	
		Gynacologist----------2	
		pedatrician----------3	
		Cardiologist----------4	
		Anesthesiologist----------5	
		Surgeon----------6	
		Internist----------7	
		Nurse----------8	
		Midwifery----------9	
		Health Officer----------10	
		Laboratory----------11	
		Pharmacist/druggist----------12	
		Another----------	
5	የትምህርት ደረጃ	ድፕሎም----------1	
		ድግሪ----------2	
		ማስተርስና ከዛበላይ----------3	
6.	የስራ ልምድ	በአመት----------	
7.	አሁን የሚሰሩበት ዲፓርትመንት/ዋርደ	Intensive care unite----------1	
		Medical----------2	
		surgical ----------3	
		Pediateric----------4	
		Gyn./obs----------5	
		OR----------8	
		Delivery----------9	
		Laboratory----------10	
		TB room----------11	
		Emargenceye----------12	
		OPD----------13	
		Another----------	

ክፍለ ሁለት: - ከ እጅ ንጽህና በጤና ተቋማት ዉስጥ የሚከሰቱት በሽታዎች እዉቀት ጋር ተዛማጅነት ያላቸዉ ጥያቄዎች

- ከተሰጡት አማራጮች ዉስጥ መልስ የምትሉት ፍትለፊት ባሉት ቁጥር ላይ ያክብቡ::

ተ.ቁ	ጥያቄ	መልስ
1	በጤና ተቋማት ዉስጥ የሚከሰቱት በሽታዎች ለመቀነስ እጅ መታጠብ የመጀመሪያዉ እርምጃ ነዉ::	አዎ----------1
		አይደለም----------2
		አላዉቅም----------3
2	እጃችን በጣም ሲቆሽሽ እጅ ማከሚያ አልኮልን አንጠቀምም	አዎ----------1
		አይደለም----------2
		አላዉቅም----------3
3.	እጅ ማከሚያ አልኮል ከ 60 ሰኮነድ በታችም ብናደርግም ዉጤታማ ነዉ	አዎ----------1
		አይደለም----------2
		አላዉቅም----------3
4.	ግላቭ ካወለቅን ቦሃላም የእጅ ንጽህና አስፈላጊ ነዉ	አዎ----------1
		አይደለም----------2
		አላዉቅም----------3
5.	ለአንድ ጊዜ እጅን ለማድረቅ የምንጠቀምበት ጨርቅ እና ወረቀት (Single-use cloth towels and paper towels) ታካሚን በምናክምበት ቦታ መጠቀም ይቻላል	አዎ----------1
		አይደለም----------2
		አላዉቅም----------3
6.	የእጅ ንፅህና በሽተኛ ከመንካታችን በፊት እና ቦሃላ ፤ ቁስል ካከምን በፊትና ቦሃላ አስፈላጊ ነዉ	አዎ----------1
		አይደለም----------2
		አላዉቅም----------3
7.	የእጅ ማከሚያ አልኮል ሲንጠቀም እጃችን እስከሚደርቅ ድረስ አንድ ላይ ማሸት አለብን	አዎ----------1
		አይደለም----------2
		አላዉቅም----------3
8.	የእጃችን ንጽህን በአግባቡ መጠበቅ በጤና ተቋማት ዉስጥ የሚከሰቱት በሽታዎች ለመቀነስ ይረዳል	አዎ----------1
		አይደለም----------2
		አላዉቅም----------3
9.	የእጅ ክሬምና ቅባቶች ጤና ባለሙዎች እንዲጠቀሙ ይመከራል	አዎ----------1
		አይደለም----------2
		አላዉቅም----------3
10.	ሌላ ታካሚ ስናክም መጀመሪያ የተጠቀምንበት ግላቭ መልሰን መጠቀም የለብንም	አዎ----------1
		አይደለም----------2
		አላዉቅም----------3
11.	ተቋማት ዉስጥ የሚከሰቱት በሽታዎች የሚያመጡ ህዋሳት ብዙን ጊዜ በታካሚዎች መካከል የሚሰራቹት በ ጤና ባለሙያዎች እጅ ነዉ	አዎ----------1
		አይደለም----------2
		አላዉቅም----------3
12	ቁስል ካከምን ቦሃላ የእጃችን ንጽህና መጠበቅ በጤና ተቋማት ዉስጥ ከሚከሰቱት በሽታዎች ይጠብቀናል	አዎ----------1
		አይደለም----------2
		አላዉቅም----------3

ክፍል ሶስት: - የእጅን ንጽህናና በጤና ተቋማት ዉስጥ የሚከሰቱት በሽታዎች ጋር የተገናኘ የአመለካከትን ጥያቄዎች

- ከተሰጡት አማራጮች ዉስጥ መልሶን ሊያሳይ ይችላል የሚሉት ፍትለፊት ባለዉ ቁጥር ላይ አንዱን ያክብቡ

ተ.ቁ	ጥያቄዎች	በጣም አልስማማም	አልስማማም	እርግጠኛ አይደለዉም	እስማማለሁ	በጣም እስማማለሁ
1.	እኔ የምሰራበት ጤና ተቋም እጅ ንጽህናን በጣም ትኩረት ይሰጣል	1	2	3	4	5
2.	የእጅ ንጽህና በ ክሊኒካል ሱፐርቫይዘሮች በጣም ትኩረት ይሰጣል	1	2	3	4	5
3.	ለሌላዉ ሰራተኛ አርአያ መሆን ግዴታ አለብኝ	1	2	3	4	5
4.	በብዙ ስራ ስጠመድ እጅ ከመታጠብ ይልቅ ስራዬን ብጨርስ ይሻላል	1	2	3	4	5
5.	በተወሰኑት ቦታዎች እጅን መታጠብ ሞትን ይቀንሳል	1	2	3	4	5
6.	በተወሰኑት ቦታዎች የእጅን ንጽህና መጠበቅ በጤና ተቋማት ዉስጥ ለሚከሰቱት በሽታዎች ለህክምና አገልግሎት የሚከፈለዉን ወጪ ይቀንሳል	1	2	3	4	5
7.	ታካሚዬን ማስቀደም ስላለብኝ ሁሌም የእጄን ንጽህና አልጠብቅም	1	2	3	4	5
8.	በጤና ተቋማት ዉስጥ የሚከሰቱት በሽታዎችን መከላከል የባለሙያናቴን ግዴታ አካል ነዉ	1	2	3	4	5
9.	የእጄን ንጽህና ለመጠበቅ የምወስነዉ በስራ ልምድ ከኔ የሚበልጡትን ተሞክሮ እያየሁ ነዉ	1	2	3	4	5
10.	በጤና ተቋማት ዉስጥ የሚከሰቱት በሽታዎች የወደፊት ህይወቴን አደጋ ላይ ሊጥሉ ይችላሉ	1	2	3	4	5
11.	በስራ ቦታዬ ዉስጥ ዝቅተኛ የሆነዉን የእጅ ንጽህና የመቀየር ችሎታ አለኝ ብዬ አምናለሁ	1	2	3	4	5
12.	በተወሰኑት ቦታዎች የእጅን ንጽህና አለመጠበቅ የሚያሳየዉ ትኩረት ማጣትን ነዉ	1	2	3	4	5
13.	የእጅ ንጽህና በህይዎቴ ዉስጥ ልምድ ሆኖብኛል	1	2	3	4	5
14.	በህክምና ስራዬ ዉስት ስለ እጅ ንጽህና ያለኝን እዉቀት በትክክል እተገብራለሁ	1	2	3	4	5
15.	በተወሰኑት ቦታዎች የእጅ ንጽህና መጠበቅ ማስታወስ ጥረትን ይጠይቃል	1	2	3	4	5
16.	ለጤና ባለሙያዎች እጃቸዉን እንዲታጠቡ ማስታወስ በጣም ጥሩ ስሜት ይሰማኝም	1	2	3	4	5
17.	የእጅን ንጽህና መተግበር የአካላችን በሽታ መከላከል አቅምን ይገነባል	1	2	3	4	5
18	ለህሙማን ከሚሰጠዉ ጥንቃቄዎች ዉስጥ የእጅ ንጽህና በጣም አስፈላጊ ነዉ	1	2	3	4	5
19.	የቆሸሸ የእጅ መታጠቢያ ሲንክ እጅ ላለመታጠቤ ምክንያት ነዉ	1	2	3	4	5
20	ትክክለኛ ሳሙና አለመኖሩ እጅ ላለመታጠቤ ምክንያት ነዉ	1	2	3	4	5
21.	የእጅ መታጠቢያ ሳሙናዎች ለቆዳችን ማሳከክ እና ድርቀት ምክንያት ስለሆኑ እጅ ላለመታጠቤ ምክንያት ነዉ	1	2	3	4	5
22.	በስራ መጠመዴ ና ጊዜ አለመኖሩ እጅን ላለመታጠብ ምክንያት ይሆናል	1	2	3	4	5
23.	ግላቭ ከተጠቀምን እጅን መታጠብ አስፈላጊ አየደለም	1	2	3	4	5
24.	መርሳት እጅን ላለመታጠቤ ምክንያት ነዉ	1	2	3	4	5

ክፍል አራት: - የእጅ ንጽህናን ሊጎዱ የሚችሉ የአስተዳደራዊ ጥያቄዎች (Questions related to administrative characteristic which may affect hand hygiene practice

- ከተሰጡት አማራጮች ዉስጥ መልስ የምትሉት ፍትለፊት ባሉት ቁጥር ላይ ያክብቡ፡፡

s.no	Questions	Possible response	Skip
1.	የናንተ ሆስፒታል ለበሽታ መከላከል የሚሆን ባጀት እአለዉ ያዉቃሉ?	አዎ----------1	
		አይደለም----------2	
2	የሆስፒታሉ ሃላፊዎች የእጅ መታጠብን ተግባር በደንብ ያበረታታሉ?	አዎ----------1	
		አይደለም----------2	
3	ባለፉት ሁለት አመታት ዉስጥ ስለ እጅ ንጽህና ስልጠና ወስደዉ ያዉቃሉ?	አዎ----------1	
		አይደለም----------2	
4	በሆስፒታሉ ዉስጥ የበሽታ መከላከል ኮሚቴ መኖሩን የዉቃሉ?	አዎ----------1	
		አይደለም----------2 → 6	
5	ጥያቄ(no.4) አዎ ከሆነ ስራ እየሰራ መሆኑን ያዉቃሉ?	አዎ----------1	
		አይደለም----------2	
6	በሆስፒታሉ ዉስጥ የእጅ መታጠብ ተግባር ላይ ድጋፍና ክትትል አለ?	አዎ----------1	
		አይደለም----------2	
7	ከቅርብ ሱፐርቫይዘር እጅ መታጠብ ተግባርን አስመልክቶ ግብረ መልስ ይሰጦታል?	አዎ----------1	
		አይደለም----------2	
8	የእጅ መታጠብን ተግባር ሁሌና በአግባቡ ለሚያከናዉኑ ሰራተኞች ማበረታቻ ይሰጣቸዋል?	አዎ----------1	
		አይደለም----------2	
9	If there are another administrative factors in the hospital that affect hand hygiene practice please explain----------		

ክፍል አምስት: - እጅን ለመታጠብ የሚያግዙ ቁሳቁሶች መዘጋጀትን የተመለከቱ ጥያቄዎች (Questions related to availability of hand hygiene facilities in working area which may facilitate hand hygiene practice

- ከተሰጡት አማራጮች ዉስጥ መልስ የምትሉት ፍትለፊት ባሉት ቁጥር ላይ ያክብቡ፡፡

s.no	Questions	Possible response	Skip
1	አሁን በሚሰሩት ክፍል ዉስጥ የእጅ መታጠቢያ ሲንክ አለ?	አዎ----------1	
		አይደለም----------2 → 3	
2	ጥያቄ(no.7) አዎ ከሆነ, ሲንኩ ይሰራል?	አዎ----------1	
		አይደለም----------2	
3	አሁን በሚሰሩበት ክፍል ዉስጥ ዉሃ አለ?	አዎ----------1	
		አይደለም----------2	
4	አሁን በሚሰሩበት ክፍል ዉስጥ ሳሙና አለ?	አዎ----------1	
		አይደለም----------2	
5	አሁን በሚሰሩበት ክፍል ዉስጥ የእጅ ማከሚያ አልኮል አለ?	አዎ----------1	
		አይደለም----------2	
6	አሁን በሚሰሩበት ክፍል ዉስጥ towel\tissue paper አለ?	አዎ----------1	
		አይደለም----------2	
7	አሁን በሚሰሩበት ክፍል ዉስጥ ግላቭ አለ?	አዎ----------1	
		አይደለም----------2	
8	አሁን የሚሰሩበት ክፍል የእጅ ቅባት ና ሎሽን አለ	አዎ----------1	
		አይደለም----------2	
9	አሁን በሚሰሩበት ክፍል ዉስጥ የእጅ መታጠቢያ መመሪያ አለ?	አዎ----------1	
		አይደለም----------2	
10	አሁን የሚሰሩበት ክፍል ዉስጥ እንደ ማስታወሻ የሚሆን የእጅ አስተጣጠብ ቅድመተከተል የሚያሳይ	አዎ----------1	
		አይደለም----------2	

	ምስል አለ?		
10	If there are another factors in the hospital that related to availability and accessibility of hygiene facilities that affect hand hygiene practice please explain---------- ----------		

ክፍል ስድስት: - ከእጅ መታጠብ ተግባር ጋር ተዛማጅነት ያለዉ ጥያቄዎች (practice of hand hygiene)

:- (እባኮትን ከተሰጠዉ አማራጭ ዉስጥ መልሶትን የሚወክል ያክብቡ)

ተ.ቁ	**ጥያቄዎች** **እጆትን ይታጠባሉ**;	**አልታጠብም**	**አንድ አንዴ**	**ግማሽ ጊዜ**	**ብዙ ጊዜ**	**ሁሌም**	**አይመለከ ተኝም**
1.	ከ መጸዳጃ ቤት መልስ	1	2	3	4	5	6
2	ቁስል ከማከማችሁ ቦሃላ	1	2	3	4	5	6
3	ቁስል ካከሙ ቦሃላ	1	2	3	4	5	6
4	በጣም የቆሸሹ ነገሮችን ከነኩ ቦሃላ	1	2	3	4	5	6
5	ደም/ የሰዉነት ፈሳሽ ከነኩ ቦሃላ	1	2	3	4	5	6
6	የህክምና መሳሪያ ከማስገባታችሁ ቦሃላ	1	2	3	4	5	6
7	መለያ ክፍል ከመግባታችሁ ቦሃላ	1	2	3	4	5	6
8	የታካሚዉን አካል ከመንካታችሁ በሃላ	1	2	3	4	5	6
9	ከመለያ ክፍል ከወጣችሁ ቦሃላ	1	2	3	4	5	6
10	ከ Endotracheal Suctioning በፊት	1	2	3	4	5	6
11	ከታካሚዉ የሚወጣዉን ፈሳሽ ከነካችሁ ቦሃላ	1	2	3	4	5	6
12	ታካሚን ከመንካታችሁ በፊት	1	2	3	4	5	6
13	ግላቭ ካወለቁ ቦሃላ	1	2	3	4	5	6
14	ከቆሸሸ ወይስ የቆሸሸ ከመሰለን	1	2	3	4	5	6

----እናመሰግናለን -----

Declaration

A thesis to be submitted to department of public health, school of Health Science of Addis Ababa University in partial fulfillment of the requirements for the Degree of Masters in public health.

Approved by the Examining Board

_____	_____	_____
Chairman, Dep. Graduate Committee	Signature	Date
_____	_____	_____
Advisor	Signature	Date
_____	_____	_____
Examiner	Signature	Date