

**ASSESSMENT OF HAND HYGIENE PRACTICE AND  
ASSOCIATED FACTORS AMONG HEALTH CARE  
WORKERS WORKING IN NEONATAL INTENSIVE CARE  
UNITS IN SELECTED PUBLIC HOSPITALS, ADDIS ABABA,  
ETHIOPIA, MAY 2023 G.C.**

**BY: MELAT DERESSA (BSCN)**

**A THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY,  
COLLEGE OF HEALTH SCIENCES, SCHOOL OF NURSING  
AND MIDWIFERY DEPARTMENT OF NURSING, IN  
PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR A  
MASTER'S DEGREE IN NEONATAL NURSING**

**MAY 2023**

**ADDIS ABABA, ETHIOPIA**

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SCIENCES SCHOOL OF NURSING AND MIDWIFERY  
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**ADVISOR: MR. ABDISSA BOKA (BSc, MSc, MPH/RH, Assist.  
Professor)**

**MR. TEWODROS TESFAYE (BSc, MSc, Assist. Professor)**

**MAY 2023**

**ADDIS ABABA, ETHIOPIA**

## APPROVAL SHEET

This thesis is my original work in the partial fulfillment of the requirement for the degree of science in neonatal nursing

**Name:** Melat Deressa

**Signature** \_\_\_\_\_

**Date** \_\_\_\_\_

**Place:** Addis Ababa University, College Of Health Science, School Of Nursing and Midwifery, Department of Neonatal Nursing.

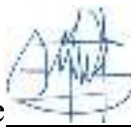
**Date of submission:**

This thesis has been submitted with my/ our approval as a university examiner or advisor(s).

Examiner	Signature	Date
_____	_____	_____

Advisors:

1. Mr. Abdissa Boka

  
Signature \_\_\_\_\_

Date 20/4/2023

2. Mr. Tewodros Tesfayes

Signature \_\_\_\_\_

Date \_\_\_\_\_



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## **ABBREVIATIONS AND ACRONYMS**

**ABHR:** Alcohol-Based Hand Rub

**CDC:** Centers for Disease Control and Prevention

**HH:** Hand Hygiene

**HCAIs:** Health Care-Associated Infections

**HCWs:** Health Care Workers

**NICU:** Neonatal intensive care unit

**SSA:** sub-Saharan Africa

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## ABSTRACT

**Background** Hand hygiene is the act of cleaning hands with water and soap and/or alcohol-based hand sanitizers to eliminate microbes. Practicing better hand hygiene decreases the spread of illnesses linked to healthcare, it is always been considered one pillar of infection control. According to the world health organization 2019 healthcare-associated infection fact sheet report, in underdeveloped nations, neonates are at a significant risk of getting infections related to healthcare.

**Objective:** The aim of the study is to evaluate hand hygiene practice and associated factors among health care workers working in NICU of selected public hospitals, Addis Ababa, Ethiopia, 2022.

**Methods:** A facility-based cross-sectional study design was done from March 21, 2022 - June 30, 2022. All health care workers working in selected hospital's NICU in a study period included in the study. Data was collected through a self-administered questionnaire adapted from world health organization and a previous similar study. Data were entered into Epi data version 3.1 and transferred to a statistical package for social science SPSS version 20 for data analysis. Bivariate logistic regression and multivariate logistic regression used to see the association factors with dependent variable. Statistical significance was assured by a p-value <0.05. Figures, tables, and graphs were used to display the results.

**Results:** The research included 140 healthcare personnel, with a 100% response rate. 31.4% of them practiced proper hand hygiene. Receiving training, accessibility of soap and water, personal towel/tissue, and poster near hand washing sink were found significantly associated with the dependent variable.

**Conclusion:** There is a significant gap in hand hygiene practice by NICU health care workers in Addis Ababa. Possible explanations for this gap include a shortage of training, lack of soap and water, lack of personal towel and poster. As a result offer training as well as outfit the workplace with resources that promote good hand hygiene.

**Key Words:** Hand Hygiene, Practice

# 1. INTRODUCTION

## 1.1 Background

Hand hygiene (HH) is a broad word that refers to any activity of hand washing using water and soap and/or alcohol-based hand sanitizers to eradicate transitory microorganisms from hands (1). Health care workers' (HCWs) hands get contaminated during ordinary patient care, according to studies, and transfer infectious illnesses from patient to patient. Hand hygiene compliance might be increased by 1.5–2 times, resulting in a 25–50% reduction in the occurrence of healthcare-associated illnesses (HCAIs) (2). As a result, it's a straight forward and critical practice for limiting the spread of (HCAIs) in hospitals(14).

World Health Organization (WHO) has introduced the "My 5 Moments for Hand Hygiene" method to help safeguard patients, health care workers (HCWs), and the hospital environment contrary to infection transmission and minimize HCAIs (4). This approach encourages healthcare workers to clean their hands before touching a patient, before clean/aseptic procedures, after body fluid exposure/risk, after touching a patient, and after touching patient surroundings. Hand hygiene was required regardless of whether gloves were used (14).

The majority of healthcare-associated infections are conveyed from patient to patient via healthcare workers' hands. In another sense, healthcare providers' hands act as a vector for the dissemination of HCAI (5). HCAIs affect hundreds of millions of patients each year all over the globe. (6).

Healthcare-associated infection is a serious disease burden that costs both patients and healthcare systems a lot of money all over the world. However, effective hand hygiene, which involves performing the easy action of cleansing hands at the appropriate times, with the proper method and duration of hand cleaning with water and detergent, as well as using an alcohol-based hand rub (ABHR), can save lives (5).

Improving hand hygiene minimizes the spread of infections related to healthcare and HCAI; it has long been regarded as one of the cornerstones of infection control; nevertheless, adherence to hand hygiene guidelines is very poor in most hospital settings(6).

To reduce HCAI, it's important to understand existing hand hygiene practices and the factors that influence hand hygiene practice. Therefore, this study aims to analyze hand hygiene practice among health care personnel in NICU and identify factors affecting hand hygiene practice.

## 1.2 Statement of the problem

Hand hygiene is washing one's hands with soap and water or using an antiseptic hand rub to remove microorganisms from the hands. (1).

Hand cleanliness is regarded as the most important part of avoiding HCAI transmission. Despite this, health professionals' noncompliance remains a problem globally. This is due to a lot of variables, the most important of which are the infrastructure and resources needed to focus on improving hand hygiene (7). According to published studies, global hand hygiene compliance is roughly 40%. (3).

Healthcare-associated infections (HCAIs) are infections that occur as a result of the use of healthcare services and are related to higher morbidity and death in patients (8).

HCAIs are expected to afflict 7% of patients in industrialized nations and >25% of patients in poor countries. Hand hygiene is the most cost-effective preventative intervention. HCAIs-related costs exceed 7 billion Euro/ year in Europe and 6.8 billion Dollar/year in the United States. In low- and middle-income nations, financial expenses relating to healthcare-related infections are underreported. (13).

Healthcare-associated infections in the NICU result in increased morbidity and mortality, longer duration of stay, and higher medical expenses. Because of immature host-defense systems and insufficient levels of beneficial endogenous flora on the skin and mucosal surfaces upon birth, newborns in neonatal intensive care units (NICUs) are at increased risk of contracting healthcare-associated infection. as well as the frequent need for instrumentation, invasive procedures, and frequent contact with staffs (9).

According to the World Health Organization's (WHO) 2019 healthcare-associated infection fact sheet report, neonates in the unindustrialized world are at significant risk of contracting HCAIs. Infection rates are three to twenty times greater than in the industrialized world(10).

Contaminated hands play a major role in hospital-acquired infection, particularly in neonates, studies have suggested that hand hygiene practice may play role in neonatal infection (11).

There are various published research on the level of hand hygiene practice in the underdeveloped world, including Ethiopia, however, there is no known study on hand hygiene practice and related factors among health care personnel working in Addis Ababa's NICU. So, the basic difference of this study from other reviewed studies is to indicate an assessment of hand hygiene practice and associated factors among health workers, particularly those working in the neonatal intensive care unit.

### **1.3 Significant of the study**

Globally, there was a considerable disparity in hand hygiene practice, particularly in developing countries, and there was inadequate data in Addis Ababa's neonatal intensive care unit. This study aims to help professionals in improving hand hygiene practices in order to prevent healthcare-associated infection and improve the quality of neonatal care services.

Furthermore, minimizing morbidity, mortality, avoidable costs, and duration of hospital stay related to healthcare-associated infection benefits the newborns and their mothers.

The study's findings were used to develop and implement NICU policies and strategies in Addis Ababa public hospitals.

Additionally, it would be helpful in informing programmers and decision-makers about the level of HH practice and associated factors so that an effective infection management strategy could be designed and researchers can use it as a baseline source of data for future research on hand hygiene.

## 2 LITERATURE REVIEW

### 2.1 Hand hygiene practice

Hand hygiene is the key preventive intervention that has been shown to be helpful in reducing HCAI and the spread of antibiotic resistance (12). Good hygiene is vital for ensuring that healthcare workers offer quality care, minimize the transmission of infections, and preserve community health (10). WHO recommends healthcare workers clean their hands before handling a patient, before performing clean/aseptic procedures, after being exposed to bodily fluids, after touching a patient, and after touching the patient's surroundings. Hand hygiene was required regardless of whether gloves were used (14). Gloves are utilized as personal protective equipment (PPE) to safeguard the hands of HCWs. Gloves, however, are only useful in the prevention of HAI when used in combination with other interventions, particularly hand cleanliness; the use of gloves never mitigates the necessity for hand hygiene. Several studies have identified a link between improper glove use and poor hand hygiene compliance. Hand rubbing or handwashing is required before donning gloves and soon after glove removal (13). Numerous investigations have shown that HCWs can infect their hands or gloves with pathogens such as Gram-negative bacilli, *S. aureus*, enterococci, or *C. difficile* by conducting "clean procedures" or contacting intact regions of the skin of hospitalized patients (13). Approximately 30% of patients in intensive care units (ICU) in high-income nations have at least one healthcare-associated infection. The incidence of ICU-acquired infection is at least two to three times higher in low- and middle-income countries than in high-income countries; newborns are also at greater risk, with infection rates in developing nations being three to twenty times higher than in high-income countries. Healthcare-associated infections account for 4% to 56% of all newborn deaths in underdeveloped countries, and 75% in South-East Asia and Sub-Saharan Africa (10). Study done from NICU in Istanbul found an overall hand hygiene practice of 37% (14).

A cross-sectional survey was done among Saudi nurses, and the study discovered that 65.4% of the participants practiced proper hand hygiene. The greatest percentages of hand washing practice recorded by participants were 91.4% after exposure to bodily fluids, 88.5% when their hands seemed dirty, and 87.2% after leaving an isolation room. The lowest percentages of hand wash

practice reported by the participants were 70.8% after physical contact with patients, followed by 72.4% before any medical procedures and 73.3% before entering an isolation room (15).

A cross-sectional study done in Nigeria showed that the rate of compliance is very low 29.7% of health care workers could claim to perform HH (16).

Narrative review studies from sub-Saharan Africa (SSA) showed that overall, the HH compliance rate was estimated to be 21.1% (6).

Systemic review and meta-analysis done in Ethiopia show that Ethiopians' current pooled handwashing practices were 57.87% (17). Other Systematic Review and Meta-Analysis done in Ethiopia show that the pooled hand hygiene compliance among healthcare workers in Ethiopia was 38% (18).

The institution-based cross-sectional study done at Gondar University Hospital indicated that good hand hygiene compliance of healthcare personnel, as measured by this study, was 16.5% (19).

An observational According to a research done among nurses at Hiwot Fana Specialized University Hospital in Harari Regional State, total HH compliance was 18.7%. "Before clean aseptic/ procedure" had the greatest hand hygiene rate of 22.9%. The greatest compliance rate was 19.6% during the night shift and 22.7% in the hospital's ICU unit. An alcohol-based hand rub was a major method for cleaning hands (20).

A cross-sectional study conducted among Health Professionals in Wachemo University Hospital, Hossaena showed that the overall hand hygiene compliance percentage according to WHO "My Five Moments for HH" was 9.2%. More compliance was noted after contact with body fluids which is 21.1% of health workers having good hand hygiene compliance. A health professional who cleans their hand before patient interaction was 4.58%, while compliance rate after contact with patient surroundings was 9.57%. Before aseptic method, compliance was 3.79% (21).

A cross-sectional survey conducted among Healthcare Staff in the Intensive Care Unit at Aabet Hospital in Addis Ababa found that overall hand hygiene compliance was 89.5%(22). Another research conducted among nurses at Tikur Anbesa Specialized Hospital in Addis Ababa indicated that hand hygiene compliance was 79% (23).

According to research done in A.A. Overall, good hand hygiene compliance was determined to be 50.4% (24). An institutional-based cross-sectional survey in the Hararghe zone, Eastern Ethiopia, discovered that 37.4% of respondents practiced proper hand hygiene (25).

## **2.2 Factors affecting hand hygiene practice**

Good Hand hygiene require the availability of functioning and well-maintained handwashing stations in or near sanitation facilities, at main entrances and exits of the healthcare institution, and in all wards. The World Health Organization (WHO) recommends a sink-to-bed ratio 1:10, with handwashing stations located within 5 meters of toilets (12). A healthcare facility with adequate hygiene supplies can give high-quality care (26).

According to a study on water, sanitation, and hygiene (WASH) in HCFs in 54 countries, 38% did not have an upgraded water source, 19% did not have sanitation facilities, and 35% were lacking in soap and water for handwashing. (27). WHO discovered that, even when supplies are accessible, 61% of healthcare workers—up to 90% in some facilities—do not follow appropriate handwashing standards.

### **2.2.1 Sociodemographic characteristics**

According to results of a cross-sectional survey of Saudi Arabian nurses, women were more likely to practice good hand hygiene than men were, and the age groups 25 to 34 and 45 to 54 had considerably lower rates of excellent hand hygiene practice (15). And the age group 25-34 years had a lesser percentage of good hand hygiene practice (56.1%) than the age group 45-54 years (84.6%) (15).

Cross-sectional study in India indicated that doctors (16.1%) were more likely than nurses (8.9%) to practice HH (28). Nurses had the highest level of hand hygiene practices as related to other HCWs (33).

Females have considerably poorer hand hygiene practices than male nurses, according to a study conducted in Hararghe zone, and those with 6-10 years of working experience had 1.71 times greater hand hygiene compliance than those with < five years of experience (25).

Study done in Addis Ababa revealed that educational level, the odds of hand hygiene practice of those master and above holders were 53.5% less than diploma holders and those first degree holders were 56.6% less than diploma holders(24)

### **2.2.2 Individual factors**

#### **Knowledge**

A research at Gonder University discovered that knowledge is independently related to hand hygiene compliance (19).

Research at Gonder University discovered that knowledge is independently linked with hand hygiene compliance (19). A study conducted at Addis Ababa general hospitals found that those with good knowledge practiced hand hygiene 2.8 times more than those with poor knowledge (23).

## **Attitude**

According to research done in Geneva (28), poor hand hygiene practices were connected to skin discomfort, interfering with worker-patient interactions, wearing gloves, and forgetfulness.

Qualitative research in Korea found that skin dryness induced by regular washing consumes too much time, and participants felt patients should meet their requirements rather than waste time (29).

According to a study done at Gonder zonal hospital, people with a favorable attitude toward hand cleanliness had double the compliance as those with a negative attitude (32). Research conducted in Addis Ababa general hospitals found that those who had a positive attitude practiced hand hygiene 1.6 times more than those with a negative attitude (24).

### **2.2.3 Organizational factors**

According to research done at the University of Geneva hospital, a lack of organizational emphasis on hand hygiene, the demand for managerial rewards for compliance, and a safe work environment were all strongly linked (31).

According to research done in Nigeria, a lack of running water and a scarcity of sanitizer continue to be major obstacles to hand hygiene practice (16). Another Indian study revealed that the lack of an easily accessible sink, alcohol-based hand rub, towel, and poster at the location of care were all important factors (33).

Systematic review done in Ethiopian revealed that the availability of hand hygiene promotion in health institutions was substantially linked with hand hygiene compliance (18).

According to research done at Gonder University, HH training, the provision of individual towel/tissue paper, the existence of ABHR in the ward, and the presence of IP committees are all independently linked variables with hand hygiene compliance (19). In another research done at Hiwot Fana Specialized University Hospital, the main reasons for not practicing hand hygiene were a lack of training, a lack of a suitable sink, and a shortage of handwashing agents (20).

A study conducted at wachamo university hospital Lack of Hand hygiene training, HH policy, the availability of adequate and serviceable HH sinks, and the existence of a pleasant space to wash hands were all found to be strongly related (21).

The availability of soap and water, as well as ABHR and towel/tissue paper, were all shown to be strongly linked with hand hygiene practice in a research done at the Tikur Anbessa specialized Hospital in Addis Ababa (23).

Based on research done at the Hararghe Hospital, having access to flowing water, recognizing the presence of an infection prevention committee, and having access to hand hygiene guidelines were all strongly related to practicing hand hygiene (25).

## Conceptual framework

The following conceptual framework was adapted after analyzing various kinds of literature on hand hygiene practice and associated factors. It shows the relationship between dependent and independent variables on hand hygiene practice (12, 23, 24, and 25).

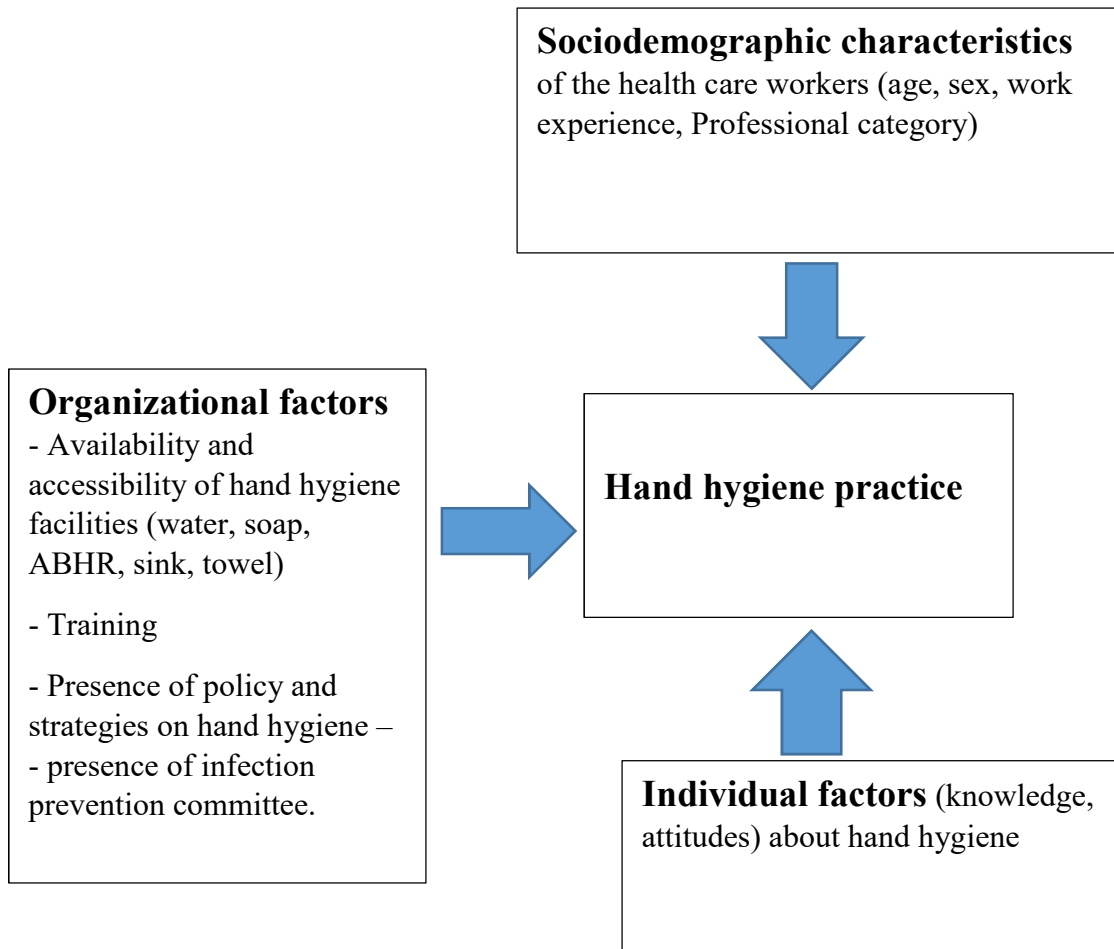


Figure: 1 Conceptual framework on hand hygiene practice among health care workers working in NICUs in selected public hospitals of Addis Ababa, Ethiopia, 2022.

### **3. OBJECTIVE OF THE STUDY**

#### **3.1 General objective**

- To assess hand hygiene practice and associated factors among health care workers working in NICU of selected public hospitals, Addis Ababa, Ethiopia, 2022

#### **3.2 Specific objectives**

- To assess the level of self-reported hand hygiene practice among health care workers working in neonatal intensive care unit in a selected public hospital, Addis Ababa, Ethiopia, 2022
- To identify factors associated with hand hygiene practice in a selected public hospital, Addis Ababa, Ethiopia, 2022.

### **3. MATERIALS AND METHODS**

#### **3.1 Study area and period**

- The study was conducted in the neonatal intensive care unit of selected public hospitals in Addis Ababa, Ethiopia from March 21, 2022, to June 30, 2022. Addis Ababa is the capital city of Ethiopia. There are 42 hospitals in Addis Ababa (14 public, 28 NGO, and private). Among the 14 public hospitals, four were randomly selected by the lottery method.
- Gandhi Memorial Hospital has 44 beds in its NICU. Every year, it serves an average of 2375 newborns. The NICU employs 35 people (physicians, nurses, and health officers).
- • Tikur Anbesa Specialized Hospital has 41 beds in its NICU. Each year, 2245 newborns are served. 50 people are working in the NICU (physicians and nurses).
- • The NICU at St. Peter Specialized Hospital contains 23 beds. It serves 1244 newborns on average every year. 25 people are working in the NICU (physicians and nurses).
- • The NICU at Zewditu Memorial Hospital has 28 beds. Each year, 1889 newborns are served. 30 people are working in the NICU (physicians and nurses).

#### **3.2 Study design**

- A facility-based cross-sectional study design was used for assessing self-reported hand hygiene practice as well as associated factors among neonatal intensive care unit health care workers.

### **3.3 Population**

#### **3.3.1 Source population**

All healthcare workers working in the NICUs at public hospitals in Addis Ababa, Ethiopia.

#### **3.3.2 Study population**

Healthcare workers who worked in the neonatal Intensive Care Units of the selected public hospitals during the study period and met the inclusion criteria.

### **3.4 Inclusion and Exclusion criteria**

#### **3.4.1 Inclusion criteria**

Health care workers who have been working in NICU during the study period and are willing to participate

#### **3.4.2 Exclusion criteria**

Health care workers who are on annual leave and are unwilling to participate.

### **4.5. Sample size determination**

Census was used to include all health care worker those working in the NICUs of selected public hospitals in Addis Ababa through the study period were included in the study.

#### 4.6 Sampling technique

To separate the public hospitals, a convenient sample approach was implemented. There are 14 hospitals in Addis Ababa, four of which serve as COVID-19 treatment centers, mental health services, and defense hospitals. Four hospitals were chosen from the remaining ten using the simple random sample procedure.

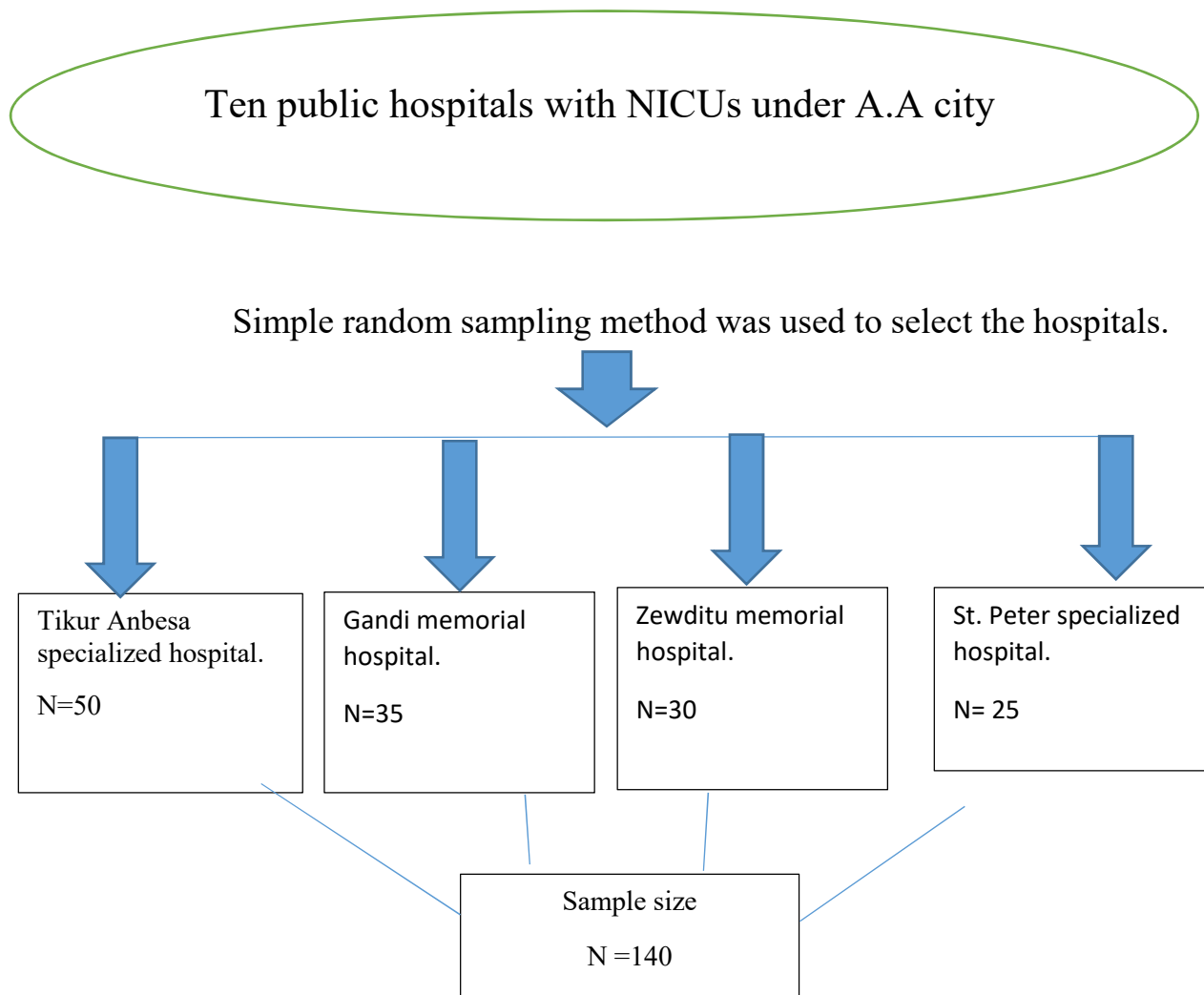


Figure: 2 Schematic diagram showing sampling procedure

**Key** N = total no of health care worker (Physicians, Nurses, Health officers).

#### 4.7 Operational definitions

**Hand hygiene** is defined as any activity of hand washing using water and soap and/or alcohol-based hand sanitizers to eliminate microorganisms from hands (5).

**Alcohol-based hand rub:** alcohol-containing solution (liquid, gel, or foam) developed for application to the hands to inhibit the development of microbes (6).

**Hand rub** uses an antiseptic hand rub to limit microbe development without the use of water and without the requirement for washing or drying with towels (6).

**Healthcare workers** are health professionals that provide care and have direct contact with patients.

**Healthcare-associated infection** infections that arise following the use of healthcare services (11).

**Practice** is defined as the act of doing hand hygiene according to a predetermined standard (26).

**Good practice** is defined as a score that is more than or equal to the mean score of the entire hand hygiene practice question (26).

**Poor practice** is defined as a score less than the mean of all hand hygiene practice questions (26).

**Knowledge of hand hygiene** relates to a healthcare provider's awareness of the questionnaire questions about the hand hygiene guideline (26).

**Good Knowledge** is defined as healthcare workers who scored at or above the mean on the knowledge questions (26).

**Poor knowledge** is defined as health care professionals who scored lower than the mean of the total knowledge questions value (26).

**Attitudes towards hand hygiene:** - Are health care practitioners' feelings regarding a concept or collection of facts linked to recommended hand hygiene and healthcare-acquired infection (24).

**Good/positive attitude:** - refers to health care professionals who scored the mean or above on the hand hygiene attitude scale (24).

**Poor/Negative Attitude:** A health care professional who scored lower than the mean value of the hand hygiene attitude score (24).

## **4.8 Study variables**

### **4.8.1 Dependent variable**

- Hand hygiene practice

### **4.8.2 Independent variable**

- Sociodemographic characteristics (gender, age, educational level, working experience...)
- Individual factors (knowledge, attitudes)
- Organizational factors (availability of water, soap, ABHR, sink, towel, poster, policy, and training).

## **4.9 Data collection tool and procedures**

Data were collected using an English version self-administered questionnaire adapted from WHO and other studies(5),(23),(24),(25). Which consist of five sections: socio-demographic characteristics has 6 items, the practice part has eight 4 point Likert scale questions operationalized as (never, sometimes, mostly, and always).The knowledge section has eight questions including four multiple-choice and four Yes/No questions. Seven Likert scale questions about attitudes were given to respondents, and they were asked to rate their attitudes regarding the practice of hand hygiene on a scale of 1 to 5 (strongly disagreed = 1, disagreed = 2, neutral = 3, agreed = 4, and strongly agreed = 5. Organizational factor section 8 Yes or No questions will be assessed using an adapted questionnaire from similar studies. The data were collected by Four data collectors (BSc. nurses) and one supervisor (BSc.in environmental health ), Training was provided for one day on the clarification of certain terms and evaluation instruments, the purpose of the study, the requirement for absolute confidentiality of respondents' information, and the time of data collection and submission on time. The questionnaire was completed by healthcare providers working in neonatal critical care units at several public hospitals.

## **4.10 Data Quality Control**

Prior to collecting actual data, the quality of the data was checked by conducting a pretest on 5% of the actual sample size at Dagmawi Minillik referral hospital. Following the pretest, any

questions that were unclear were revised. Before starting data collection, data collectors were trained on the completeness of questionnaire responses. The principal investigator and the supervisor closely oversaw data collection to ensure completeness and clarity before entering data.

#### **4.11 Data Processing and Analysis**

The collected data were checked for completeness and cleaned before entering a computer. Then, data were coded each practice tool was structured into practice-related questions were asked, using 4 points Likert scale operationalized as (never, sometimes, mostly, and always). Thus, those who answered "Always" as the only suitable practice scored a 1 while the others received a 0. The knowledge section has eight questions including four multiple-choice and four Yes/No questions, each right response to the multiple-choice questions earned a score of 1 or was deemed "Yes," while each erroneous response received a score of 0 or was considered "No." Seven questions about attitudes were given to respondents, and they were asked to rate their attitudes regarding the practice of hand hygiene on a scale of 1 to 5 (strongly disagreed = 1, disagreed = 2, neutral = 3, agreed = 4, and strongly agreed = 5). Strongly Disagreed (1 point) and Strongly Agreed (5 points) answers each received a score. The negative questions had reversed coding, then cleaned, edited, and entered into Epi data version 3.1 for cleaning and transferred to SPSS version 20 for data analysis. Descriptive statistics, bivariate logistic and multivariate logistic regression analyses were performed to determine the dependent and independent variables. During the bivariate analysis, crude odds ratios with 95% confidence intervals and a significance level of P 0.25 were used to see the association between factors and hand hygiene practice, and the significant ones were included in the multivariate logistic regression analysis to see the relative effect of confounding variables and variable interaction. Hand hygiene, adjusted odd ratios with 95% confidence intervals and significance level at P value 0.05 were utilized to declare the connection between the independent and outcome variable. Frequencies, percentages, charts, and figures were used to show the data.

#### **4.12 Ethical consideration**

Ethical clearance was sought and obtained from the Institutional Review Board (IRB) of the Addis Ababa University, College of Health Science School of nursing and midwifery, permission and support letter was obtained from the medical director and nursing director offices from the respective hospitals before data collection. Informed written consent was obtained from all respondents before data collection.

#### **4.13 Dissemination of the result**

The result of the study was submitted to Addis Ababa University, College of health science, department of nursing and midwifery, and the regional health bureau. The four public hospitals (TikurAnbesa specialized hospital, Gandhi Memorial Hospital, St. Peter Specialized Hospital, and Zewuditu Memorial Hospital). Then it will be presented at different seminars, symposiums and publications will be considered.

## 5. RESULTS

### 5.1 Socio-demographic characteristics

A total of 140 study subjects included in this study, with a response rate of 100 %. Almost half of the participants (52.10%) were female and more than half (55.70%) were single. The predominant age group was 25–35 years (67.90%), with a mean age and standard deviation of  $28.7 \pm 4.8$  years. In terms of level of education about 89 (63.60%) were first-degree holders and 63 (45.00%) participants were nurses. Regarding work experience of the study participants 59 (42.10%) of them have 5-10 years of work experience.

**Table 1: Distribution of socio demographic characteristics of study participants in selected Hospital; Addis Ababa, Ethiopia, 2022 (n=140)**

<b>Variables</b>	<b>Response</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Sex</b>	Male	67	47.90
	Female	73	52.10
<b>Age</b>	<25	30	21.40
	25-35	95	67.90
	>35	15	10.70
<b>Marital status</b>	Single	78	55.70
	Married	62	44.30
<b>Educational status</b>	Diploma	7	5.00
	BSc	89	63.60
	MSc and above	44	31.40
<b>Professional category</b>	Pediatrician/neonatologist	29	20.70
	Resident	12	8.60
	Nurse	63	45.00
	Other	36	25.70
<b>Work experience</b>	< 5	32	22.90
	5-10years	59	42.10
	>10years	49	35.00

## **5.2 The practice of hand hygiene among NICU health care workers**

Participants who scored higher than or equal to the mean value of the practice item questions were classified as having engaged in good practice, while those who scored lower than the mean value were classified as poor practice.

A study participant's mean score for accurately answering practice questions was  $2.15 \pm 1.97$ . Those who scored above the mean were 44 (31.40%), while those who scored below the mean were 96. (68.60%) (Figure 3).

When it comes to hand hygiene moment, the majority 65.00% of healthcare workers practice hand hygiene after coming into contact with bodily fluids, 50 (35.70%) before performing an aseptic or clean procedure, 43 (30.70%) after touching a patient, 26 (18.60%) before touching a patient, 25 (17.90%) after touching the patient's surroundings and after taking off the glove, 18 (12.90%) before donning the glove, and only 17.10% after drying their hands after washing ( **Table2 and figure 4**).

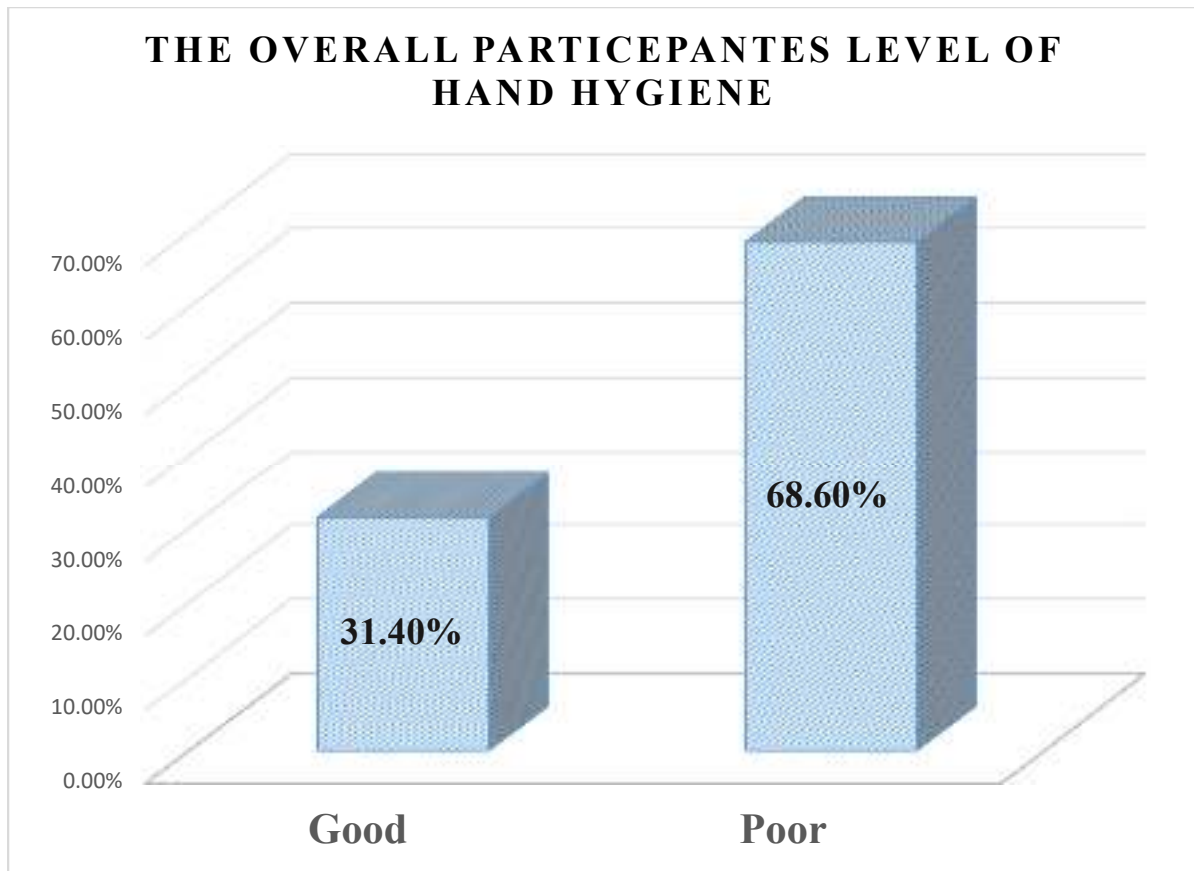


Figure 3: Hand hygiene practice level of health care workers working in NICU at the public hospitals in Addis Ababa, Ethiopia, 2022, (n=140)

**Table 2 Hand hygiene practice of study participants at NICU in selected public hospitals, Addis Ababa, Ethiopia, 2022 (n=140)**

<b>Variables</b>	<b>Never N (%)</b>	<b>Some times N (%)</b>	<b>Mostly N (%)</b>	<b>Always N (%)</b>
<b>Did you practice hand hygiene before touching the patient?</b>	15(10.70)	46(32.90)	53(37.90)	<b>26(18.60)</b>
<b>Did you practice hand hygiene before the aseptic/clean procedure?</b>	19(13.60)	32(22.90)	39(27.90)	<b>50(35.70)</b>
<b>Did you practice hand hygiene before donning gloves?</b>	39(27.90)	57(40.70)	26(18.60)	<b>18(12.90)</b>
<b>Did you practice hand hygiene after exposure to body fluids</b>	1(0.70)	12(8.60)	36(25.70)	<b>91(65.00)</b>
<b>Did you practice hand hygiene after touching the patient?</b>	13(9.30)	44(31.40)	40(28.60)	<b>43(30.70)</b>
<b>Did you practice hand hygiene after touching the patient's surroundings</b>	15(7.90)	71(47.10)	29(25.70)	<b>25(17.90)</b>
<b>Did you practice hand hygiene after removing the glove</b>	16(11.40)	54(38.60)	45(32.10)	<b>25(17.90)</b>
<b>Did you drying your hand after washing?</b>	22(15.70)	49(35.00)	45(32.1)	<b>24(17.10)</b>

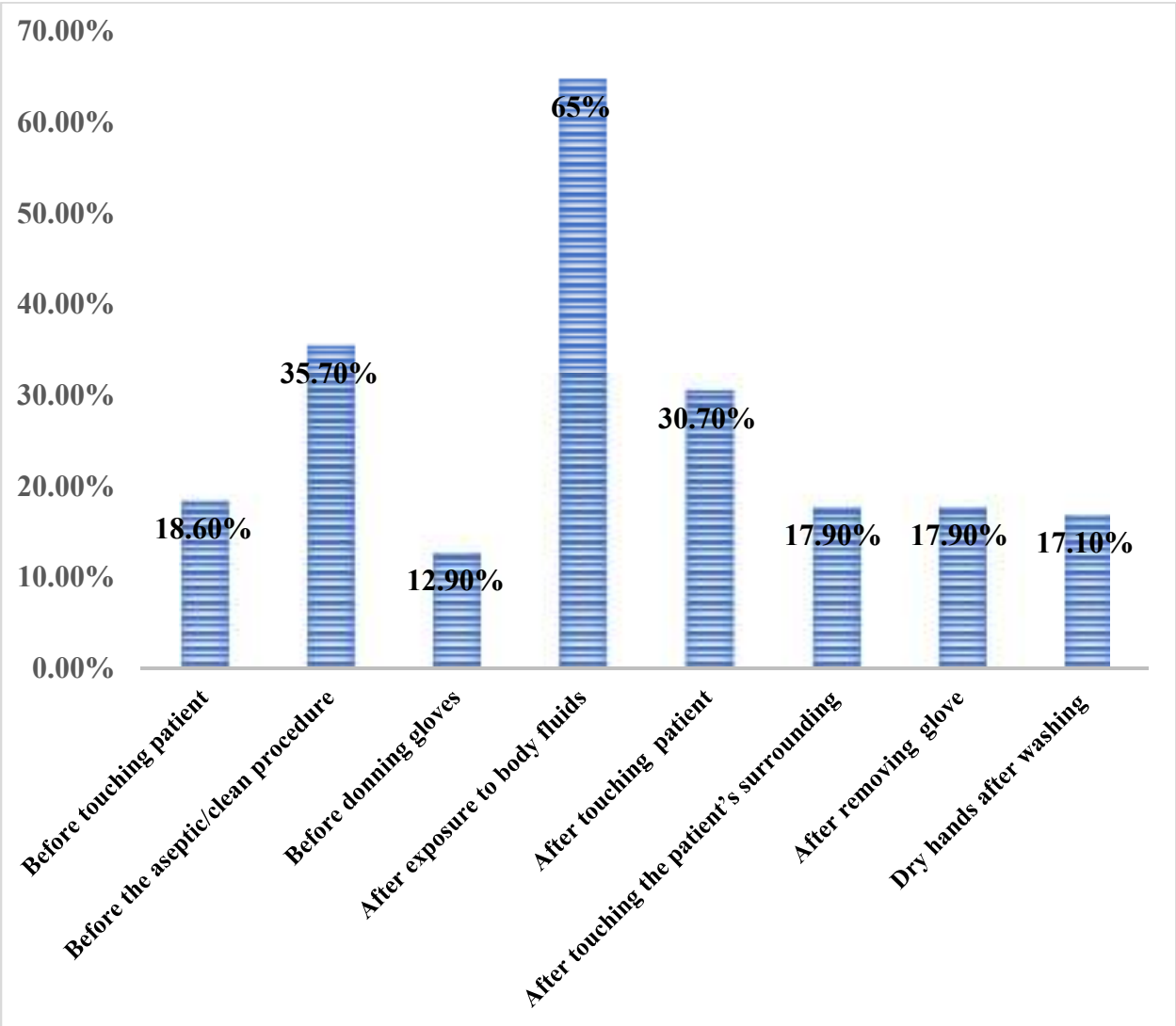


Figure 4: good hand hygiene practice level of health care workers working in NICU at the public hospitals in Addis Ababa, Ethiopia, 2022, (n=140)

### 5.3 knowledge related to hand hygiene practice

The average amount of knowledge questions that study participants correctly answered was  $4.8 \pm 0.98$ . The percentage of respondents scoring above or equal to the mean was 97 (69.30%), whereas those scoring below the mean value were 3(30.70 %). (**Figure 5**)

Around 134 (95.70%) of the Participants are aware that performing hand hygiene before handling a patient aids in the prevention of germ transmission. Only 22 (15.70%) of healthcare workers were aware that unclean hands are the main way of potentially harmful germs are spread from one patient to another in a healthcare facility, and 21 (15.00%) were aware that the germs that cause HCAs are most frequently found within the patient. In terms of knowledge about alcohol-based hand rub and hand washing with soap and water, more than half (57.10%) of healthcare workers were conscious that alcohol-based hand rub applied for 20 to 30 seconds in order to kill most germs on hands, and only 18.60% of healthcare workers knew that soap and water handwashing needs to be performed for 40 to 60 seconds. Respectively, more than half (52.10%) of the participants had formal hand hygiene training. (**Table 3**)

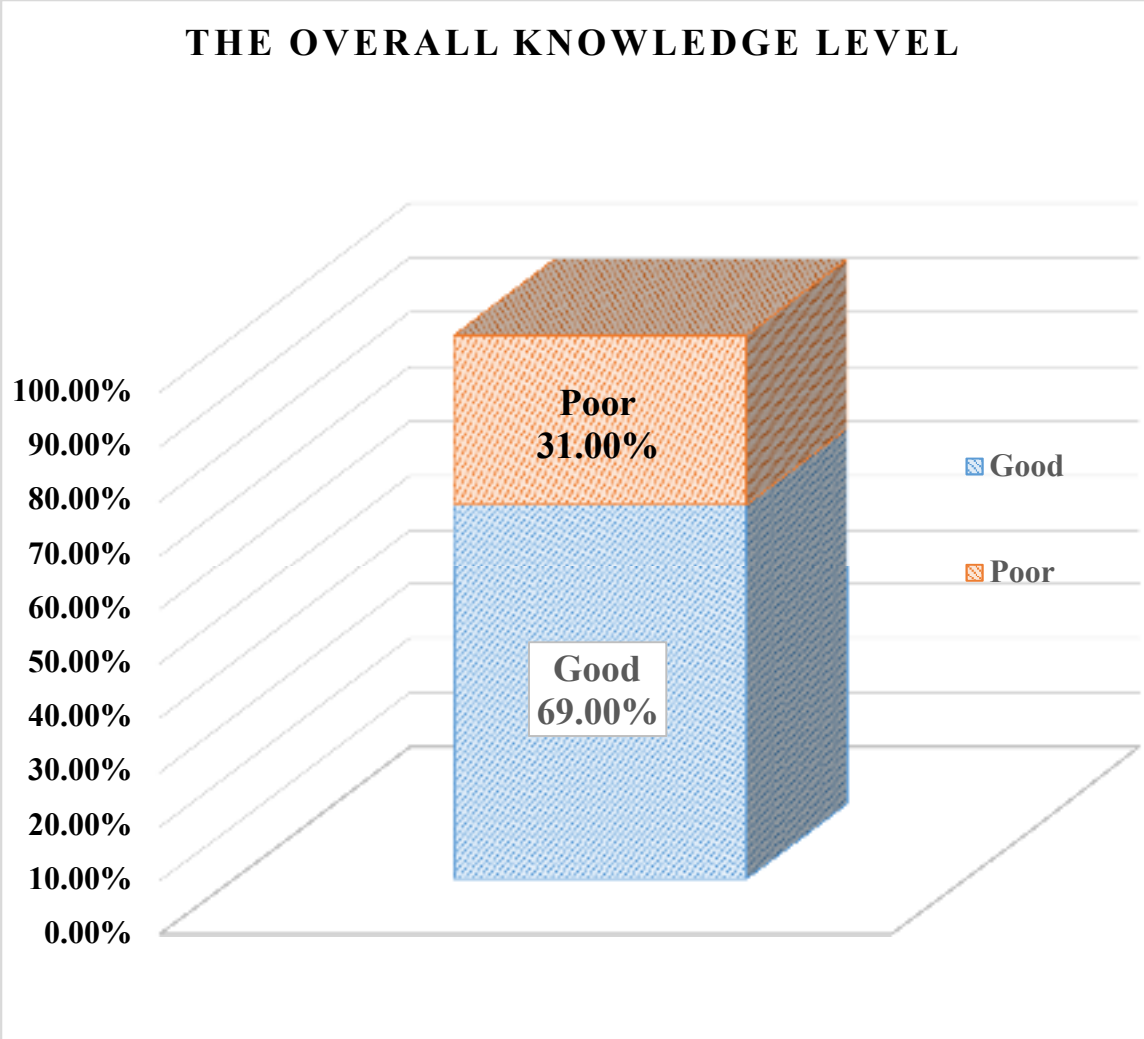


Figure 5: knowledge levels of hand hygiene practice among health care workers working in NICU at the public hospitals in Addis Ababa, Ethiopia, 2022, (n=140)

**Table: 3 Knowledge level of hand hygiene practice among NICU health care workers working in selected public hospitals, Addis Ababa, Ethiopia, 2022 (n=140)**

<b>Variable</b>	<b>Correct answer Frequency (%)</b>	<b>Incorrect answer Frequency (%)</b>
<b>Which of the following is the main route of cross-transmission of potentially harmful germs between patients in a healthcare facility?</b>	22(15.70)	118(84.30)
<b>What is the most frequent source of germs responsible for healthcare-associated infections?</b>	21(15.00)	119(85.00)
<b>Which of the following hand hygiene actions prevents transmission of germs to the patient?</b>		
<b>A. Before touching a patient.</b>	134(95.70)	6(4.30)
<b>B. Immediately before clean/aseptic procedure</b>	130(92.90)	10(7.10)
<b>C. Immediately after the risk of body fluid exposure</b>	133(95.00)	7(5.00)
<b>D. After exposure to the surroundings of a patient</b>	130(92.90)	10(7.10)
<b>What is the minimal time needed for an alcohol-based hand rub to kill most germs on your hands?</b>	80(57.10)	60(42.90)
<b>What is the minimal time needed for handwashing with soap and water?</b>	26(18.60)	114(81.40)
<b>Did you receive formal training in hand hygiene?</b>	Yes 73(52.10)	No 67 (47.90))

#### **5.4 Attitude towards hand hygiene practice among NICU healthcare workers**

The average and standard deviation of the attitude score were 17.03 + 3.87. Respondents who scored above than or equal to the mean value were 58 (41.40%), whereas those who scored below the mean value were 82 (58.60). **see Figure 6**

The majority of participants (70.70%) agreed with the positive attitude that using the right hand hygiene techniques at all times, followed by (85.70%) who agreed that they have sufficient knowledge about hand hygiene. However, the majority of healthcare health care providers (88.60%) agreed with the negative attitude that emergencies and other priorities make maintaining good hygiene more difficult, and 75.70% of healthcare workers think that using the right hand hygiene techniques results in irritation and dryness. More than half of the participants (58.60%) thought that using hand hygiene practice less frequently when wearing gloves. The majority of healthcare workers (60.00%) feel guilty if they don't wash their hands. **See table 4.**

## THE OVERALL PARTICIPANTS ATTITUDE LEVEL

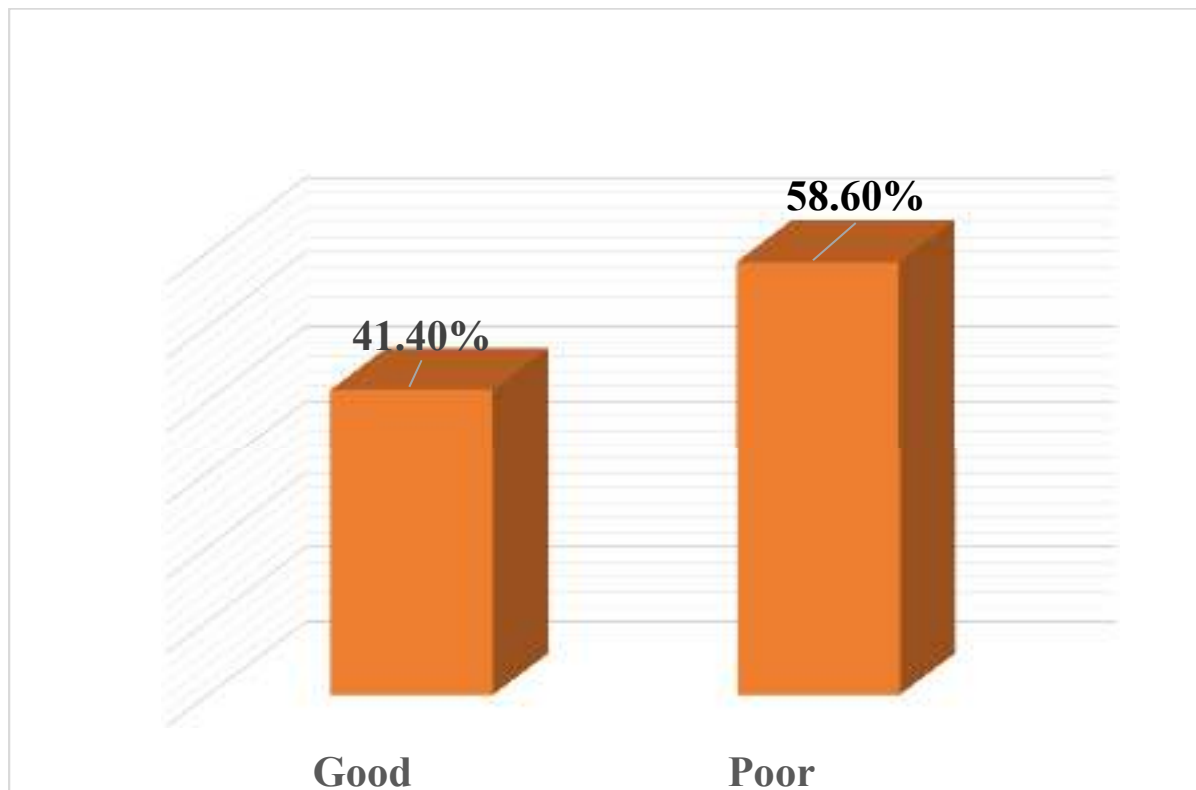


Figure 6: Attitude levels towards hand hygiene practice among health care workers working in NICU at the public hospitals in Addis Ababa, Ethiopia, 2022, (n=140)

Table 4: Attitude level toward hand hygiene practice among NICU health care workers working in selected public hospitals, Addis Ababa, Ethiopia, 2022(n=140)

<b>VARIABLES</b>	<b>Positive attitude Frequency (%)</b>	<b>Negative attitude Frequency (%)</b>
<b>I follow correct hand hygiene practices at all times.</b>	99 (70.70)	41(29.30)
<b>I have sufficient knowledge about hand hygiene.</b>	120 (85.70)	20 (14.30)
<b>When busy it is more important to complete my tasks than to perform hand hygiene.</b>	54 (38.60)	86 (61.40)
<b>Emergencies and other priorities make hygiene more difficult at times.</b>	16 (11.40)	124 (88.60)
<b>Wearing gloves reduces the need for hand hygiene.</b>	58 (41.40)	82 (58.60)
<b>Hand hygiene practice causes irritation and dryness.</b>	34 (24.30)	106 (75.70)
<b>I feel guilty if I fail to perform hand hygiene.</b>	84 (60.00)	56 (40.00)

## **5.5 Organizational factors towards hand hygiene practice**

In this section, there were eight organizational related yes-or-no questions asked. Each "Yes" response received a score of 1, but each "No" response received a score of 0.

The majority of participants (79.30%) stated that the hospital encourages good hand hygiene; however 68.60% of them complain that there is no soap or water available in the working ward. Half of them (53.60%) mentioned that there is a sink available in the working ward and that alcohol-based hand rub is present. More than half (67.10%) confirmed that there is no individual towel or tissue paper for drying hands in their working area, regarding awareness of the existence of infection prevention committees, seventy three (52.10%) of the respondents were aware of the existence of these committees. The majority of participants (61.40%) reported that there is no hand hygiene policy in the working ward, and half of them (53.60%) reported that there is no hand hygiene poster near the hand washing sink. (Table 5)

**Table: 5 Organizational factors towards hand hygiene practice in Selected Hospitals Addis Ababa, Ethiopia 2022(n=140).**

<b>Variables</b>		<b>Frequency</b>	<b>Percentage (%)</b>
<b>Hospital promoting the importance of hand hygiene?</b>	YES	111	79.30
	NO	29	20.70
<b>Availability of soap and water in the working ward?</b>	YES	44	31.40
	NO	96	68.60
<b>Availability of sink in working ward?</b>	YES	75	53.60
	NO	65	46.40
<b>Availability of Alcohol-based hand rub in the ward?</b>	YES	75	53.60
	NO	65	46.40
<b>Availability of towel/tissue paper?</b>	YES	46	32.90
	NO	94	67.10
<b>Knew the presence of infection prevention committees?</b>	YES	73	52.10
	NO	67	47.90
<b>Is there a hand hygiene policy in the working ward?</b>	YES	54	38.60
	NO	86	61.40
<b>Is there a hand hygiene poster near to hand-washing sink?</b>	YES	65	46.40
	NO	75	53.60

## 5.6 Factors Associated With hand hygiene Practice of health care workers at NICU

A bivariate analysis was utilized to determine the relationship between one independent variable and the dependent variable. The multivariate logistic regression analysis was performed using variables with  $P < 0.25$  during the bivariate analysis to investigate the relationship of factors with hand hygiene practices.

In bivariate logistic regression analysis, seven factors (get formal training, availability of soap and water, sink in working area, alcohol-based hand rub, of Personal towel/tissue, hand hygiene policy in the ward, and poster near hand washing sink) were found to have association at p value of  $< 0.25$  with the outcome variable. After multivariate logistic regression analysis, four variables (get formal training, availability of soap and water, personal towel/tissue, and poster near hand washing sink) were found to be significantly associated with the dependent variable.

Participants who received hand hygiene protocol training were 4.7 times more likely to perform hand hygiene (AOR=4.77, 95% CI: 1.79, 12.70) than those who did not get training. Health care workers who had access to appropriate soap and water at their workplace were five times more likely to practice good hand hygiene (AOR=5.02, 95% CI:1.80, 13.97) than those who did not have access to adequate soap and water, Participants who had towel/tissue paper for drying in their ward were 3.5 times more likely to practice good hand hygiene (AOR=3.49, 95% CI: 1.27, 9.57) than those who did not, Healthcare workers are 4.3 times more likely to practice hand hygiene (AOR=4.31,95%CI:1.51,12.32) than those who do not have access to the hand hygiene poster at the hand washing sink. **See Table 6**

**Table 6: Bivariate and Multivariate analysis of factors associated with hand hygiene practice among health care workers in the NICU of selected Hospitals, Addis Ababa, Ethiopia, 2022. (n=140)**

Variable		Practice		COR	AOR	PV
		Good	poor	(95%CI)	(95%CI)	
Receive formal training in hand hygiene	Yes	34	39	4.96 (2.20-11.21)	4.774 (1.79-12.70)	<b>0.002**</b>
	No	10	57	1	1	
Availability of soap and water in the working ward	Yes	27	17	7.38 (3.31-16.45)	5.028 (1.80-13.97)	<b>0.002**</b>
	No	17	79	1	1	
Availability of sink in working ward	Yes	31	44	2.818 (1.31-6.03)	1.044 (0.36-2.98)	0.937
	No	13	52	1	1	
Availability of Alcohol-based hand rub in the ward	Yes	29	46	2.101 (1.00-4.40)	0.476 (0.15-1.43)	0.188
	No	15	50	1	1	
Availability of towel/tissue paper	Yes	27	19	6.337 (2.92-14.14)	3.496 (1.27-9.57)	<b>0.015**</b>
	No	17	77	1	1	
Is there a hand hygiene policy in the working ward?	Yes	23	31	2.296 (1.10-4.76)	1.232 (0.45-3.33)	0.681
	No	21	65	1	1	
Is there a hand hygiene poster near to hand-washing sink?	Yes	32	33	5.09 (2.32-11.17)	4.31 (1.51-12.32)	<b>0.006**</b>
	No	12	63	1	1	

NB: COR: Crude Odd Ratio \*, significant at P-value  $\leq 0.20$ ; AOR: Adjusted Odd Ratio \*\*, significant at p-value  $\leq 0.05$ ; and 1: Reference.

## 6. DISCUSSION

Contaminated hands have a significant impact on HAIs, particularly in infants. According to research, efficient hand cleanliness practice among healthcare staff safeguards newborns against illness.(11). The aim of this study was to assess the level of hand hygiene practice and associated factors among health care workers working in selected public hospitals' NICUs in Addis Ababa, Ethiopia.

The study found that 31.40% of NICU healthcare workers practiced good hand hygiene. The findings of this study are compared to those of other studies done across the world. Almost the same results were discovered in the study Nigeria tertiary hospital 29.70% (16) India tertiary hospital reported the result 28.00% (33). This result is greater than the findings of previous research in Sub-Saharan Africa: 21.10% (6), Waghimira zonal hospital 20.60%(30), Hiwot fana specialized university hospital 18.70% (23), Gonder university hospital 16.50% (19), Gonder zonal hospital 14.90% (32) and Wachamo university hospital 9.20% (21). And lower as compared to Saudi Arabia regional hospital 65.00%(15). In a tertiary university hospital in Istanbul 37.00 %(17), Ethiopia 38.00% (21), Addis Ababa Tikur Anbesa hospital 79.00%(23), and Hararghe public hospital 37.40% (25) Possible explanations for the discrepancy include the research area, setup, sample size, and the availability and accessibility of hand hygiene materials.

The aim of this study was also to find out what factors influence hand hygiene practice among NICU healthcare workers Addis Ababa. In this study Hand hygiene practice was significantly associated with the training, accessibility of soap and water, availability of towel/tissue paper and availability of poster. Those who get formal training were 4.7 times more likely to practice hand hygiene than those who did not get training. This result is in line with studies conducted in Denmark (31), Gonder zonal public hospital(32), Waghimira zonal hospital(30), Hararghe public hospital(25) Aabet Hospital Addis Ababa(22) which showed that training had a significant relationship with hand hygiene practice. This might be due to the fact that training built capacity.

Healthcare workers who had access to adequate soap and water at their workplace were five times more likely to practice good hand hygiene than those who did not have access to adequate soap and water. This finding is supported by studies done in Nigeria tertiary hospital(16), Hiwot Fana specialized university hospital(20), wachamo university hospital(21), Gonder zonal public

hospital(32) which showed the availability of soap and water in the working ward had a positive association with hand hygiene practice. The fact that accessing soap and water in working area improve frequent and timely hand hygiene practice.

Participants who had towel/tissue paper for drying in their ward were 3.5 times more likely to practice good hand hygiene than those who did not. This finding is in line with the studies done in Gonder university hospital(19), Addis Ababa Tikur Anbesa specialized hospital (23) which showed that accessibility of towel/tissue paper for drying hand had positive association with hand hygiene practice the possible explanation is that dry hand is less contaminated than wet hand.

Healthcare workers with access to the hand hygiene poster near to hand washing sink are 4.3 times more likely to practice hand hygiene than those who do not. This finding is supported by the studies done in India tertiary hospital(33), which showed that the display hand hygiene poster near to hand washing sink had a positive association with hand hygiene practice the possible explanation is that poster is helpful to remind hand hygiene practice.

Other research found a significant relationship between sociodemographic factors and individual factors (knowledge, attitudes) concerning hand hygiene. However, the findings of this study did not show a significant association between hand hygiene practice and those characteristics.

## **7. STRENGTHS AND LIMITATIONS OF THE STUDY**

### **7.1. Strength of the Study**

- Use standard tools developed by WHO.
- To minimize social desirability bias, we use the Likert scale assessment.
- The study involved five public hospitals found in Addis Ababa city and tried to make the result representative.

### **7.2. Limitation of the study**

- This study was not supported by observation. However, previous According to research conducted in Denmark and Saudi Arabia, the self-reported hand hygiene practice level can be recognized as an adequate substitute when time and money are limited.
- Limited previous research was found especially in NICU.
- Shares disadvantages in cross-sectional studies

## **8. CONCLUSION AND RECOMMENDATIONS**

### **8.1 Conclusion**

Hand hygiene practice among NICU health care workers in Addis Ababa was found low (31.4%), regarding "my five moments of hand hygiene" technique, the greatest practice was 65% which is hand hygiene practice following exposure to bodily fluids and the lowest percentage of healthcare workers' hand hygiene practices were after touching the patients' surroundings (17.8%), followed by before touching the patient. Attending training, having access to soap and water, having towels and tissue paper readily accessible, and having a poster near the hand washing sink were all independently associated with practicing good hand hygiene. This suggested that efforts should be made to improve hand hygiene practice, so it is preferable to offer training as well as outfit the workplace with resources that promote good hand hygiene.

## **8.2 Recommendations**

### **For the FMOH**

It is advised that healthcare workers receive ongoing training and review sessions on hand hygiene practices. Additionally, it is advised that enough budget be allocated for hand hygiene, which helps to prevent infection, infection-related deaths, and health costs.

### **For Hospitals**

Recommend that regular training sessions are essential for staff to practice proper hand hygiene. Distribute enough supplies, cascade the guidelines to every ward, display posters near handwashing sinks, and observe and feedback to ensure consistent compliance. This keeps patients safe in healthcare facilities and helps stop the spread of infections.

### **For healthcare workers.**

In order to prevent infections, it is critical to follow the guidelines and practice proper hand hygiene in healthcare settings. To ensure that the care is clean and safe, supportive supervision must be arranged. Understanding the existing hand hygiene practices will help in providing on-site corrective feedback to improve hand hygiene practice.

### **For researchers**

Researchers can use this study as a baseline. It is advised to conduct a further triangulated study on hand hygiene practices.

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## **Annex I: information sheet**

Hello, my name is Melat Deressa I am a postgraduate student in Addis Ababa University, college of nursing and midwifery doing research. I would like to ask few questions about hand hygiene practice and factors associated hand hygiene practice to you. Your genuine information that you are going to provide will help policy makers to design strategy/give priority for improvement of hand hygiene. Your answers will remain confidential and your name will not be taking down. Participation in this study is voluntary and you are not obligated to answer any questions that you do not want to answer.

**Title of the research:** Assessment of hand hygiene practice and associated factor among health care workers working in neonatal intensive care unit in selected public hospital Addis Ababa, Ethiopia, 2022.

**Objective of the study:** To assess hand hygiene practice among health care workers working in neonatal intensive care unit and to identify factors associated with hand hygiene practice in a selected public hospital, Addis Ababa, Ethiopia, 2022.

**Risks and benefits of the study:** By participating in this study and answering the questions, it will be helpful for us to assess the level of hand hygiene practice among NICU health care workers and identify the major factors associated with hand hygiene practice. Your participation in this study will not involve any risks to you.

**Rights of the participant:** participating and not participating is the full right and participants can stop from participation in the study at any time. Participants can ask any questions which is not clear for understanding.

**Persons to contact:** If there are any questions about study, you can contact by any of the following addresses.

Address of investigator: Melat Deressa, Tel: +251913037460 and Email: [melat.diressa@gmail.com](mailto:melat.diressa@gmail.com)

### **Annex II: Informed consent**

I have read the information sheet and clearly understood the purpose of research, the risks and benefits, issue of confidentiality, the right of participating and contact address for any queries. I have been given opportunity to ask questions for things that are unclear. I was informed my rights whether to continue or terminate the study. Therefore I declare my voluntary consent to permit this study.

Signature \_\_\_\_\_

Date \_\_\_\_\_

### Annex III: Self-administered Questionnaire

Assessment of hand hygiene practice and associated factors among NICU health care workers working in public hospitals, Addis Ababa, Ethiopia, 2022.

Date of data collection \_\_\_\_\_ Questionnaire SN \_\_\_\_\_

Hospital code \_\_\_\_\_

Data collector's name \_\_\_\_\_ Supervisor's name \_\_\_\_\_

Please read the following questions very carefully and then answer them by encircling, filling, or using √ the tick symbol in the space provided.

#### Section 1: Socio-demographic characteristics

No	Questions	Possible response	Skip
101	Age (years)	_____	
102	Sex	A. Male B. Female	
103	Marital status	A. Single B. Married C. Divorced D. other	
104	Educational status	A. Diploma B. BSc C. MSc and above	
105	Professional category	A Pediatrician/neonatologist B Resident C Nurse D other	
106	Work experience	_____	

## Section 2: Questions for the assessment of hand hygiene practice

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<b>s.no</b>	<b>Questions</b>	<b>Never</b>	<b>Some times</b>	<b>Mostly</b>	<b>Always</b>
201	Did you practice hand hygiene before touching the patient?				
202	Did you practice hand hygiene before the aseptic/clean procedure?				
203	Did you practice hand hygiene before donning gloves?				
204	Did you practice hand hygiene after exposure to body fluids?				
205	Did you practice hand hygiene after touching the patient?				
206	Did you practice hand hygiene after touching the patient's surroundings?				
207	Did you practice hand hygiene after removing the glove?				
208	Did you drying your hand after washing?				

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### Section 3. Questions for the assessment Knowledge about hand hygiene

s.no	Questions	Response
301	Which of the following is <b>the main route of cross-transmission</b> of potentially harmful germs between patients in a healthcare facility? (circle one answer only)	A. Health-care workers' hands when not clean. B. air circulating in the hospital. C. Patients' exposure to colonized surfaces (i.e., beds, chairs, tables, floors). D. Sharing non-invasive objects (i.e., stethoscopes, pressure cuffs, etc.) between patients.
302	What is the most frequent source of germs responsible for health care-associated infections? (circle one answer only)	A. Germs already present on or within the patient. B. The hospital environment.
303	Which of the following hand hygiene actions prevents transmission of <b>germs to the patient?</b>	
	A. Before touching a patient.	YES NO
	B. Immediately before a clean/aseptic procedure	YES NO
	C. Immediately after the risk of body fluid exposure	YES NO
	D. After exposure to the immediate surroundings of a patient	YES NO
304	What is the minimal time needed for an alcohol-based hand rub to kill most germs on your hands?	A. < 20 seconds. B. 20-30 seconds. C. > 30 seconds. D. 60 seconds.
305	What is the minimal time needed for handwashing with soap and water?	A <20 seconds. B. 20-30 seconds. C.40-60 seconds. D > 60 seconds.
306	Did you receive formal training in hand hygiene?	A YES B NO

#### Section 4: Questions for the assessment of attitude on hand hygiene

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s.no	Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
401	I follow correct hand hygiene practices at all times.					
402	I have sufficient knowledge about hand hygiene.					
403	When busy it is more important to complete my tasks than to perform hand hygiene.					
404	Emergencies and other priorities make hygiene more difficult at times.					
405	Wearing gloves reduces the need for hand hygiene.					
406	Hand hygiene practice causes irritation and dryness.					
407	I feel guilty if I fail to perform hand hygiene.					

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**Section 5 Questions for the assessment of organizational factors.**

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<b>s.no</b>	<b>Questions</b>	<b>Response</b>
501	Hospital promoting the importance of hand hygiene?	YES NO
502	Availability of soap and water in the working ward?	YES NO
503	Availability of sink in working ward?	YES NO
504	Availability of Alcohol-based hand rub in the ward?	YES NO
505	Availability of towel/tissue paper?	YES NO
506	Knew the presence of infection prevention committees?	YES NO
507	Is there a hand hygiene policy in the working ward?	YES NO
508	Is there a hand hygiene poster near to hand washing sink?	YES NO

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