ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF ALLIED HEALTH SCIENCES
DEPARMENT OF NURSING AND MIDWIFERY

ASSESSMENT OF HAND HYGIENE PRACTICE AND FACTOR AFFECTING COMPLIANCE AMONG NURSES IN BLACK LION SPECIALIZED REFERRAL HOSPITAL, ADDIS ABABA, ETHIOPIA.

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A thesis submitted to the department of nursing and midwifery, in partial fulfillment of the requirements for masters degree in adult health nursing

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THIS MSCN THEISIS BY ABAYNESH NEGEWO SERITI ACCEPTED IN ITS PRESENTED FORM BY BOARD OF EXAMINERS IN SATISFING THESIS REQUIREMENT FOR THE DEGREE OF SCIENCE IN ADULT HEALTH NURSING.

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Abstract

Background: Hand hygiene is an important measure to prevent and control infection particularly in developing countries, the identification of several risk factors associated with poor hand hygiene compliance is extreme importance. Alcohol based hand rube (ABHR) is simple measure to prevent the transmission of infection.
This institutional based cross- sectional study focus on describing hand hygiene practice of nurses and provides base line information on the area.

Objective: To assess hand hygiene practices among Nurses in Black Lion Specialized Referral Hospital, Addis Ababa Ethiopia.

Methods: Institution based quantitative cross sectional study design was used to assess hand hygiene practice and factoraffecting compliance among Nurses in Black Lion Specialized Referral Hospital. A total of 288Nurses were included and selected by simple random sampling. Data collection was made by using self-administered structured questionnaire.The collected data was checked visually for its completeness and the response were coded and entered into the computer using EPI info version 3.5.1. Statistical package, and the 10% of the response was randomly selected and check for the consistency of data entry. Then data were exported to windows of Statistical Package for Social Science (SPSS) version 20 for data analysis.Descriptive statistics, bivariate logistic and multivariate logistic regression analysis was done to see association between factors and hand hygiene practice.

Result: A Total of 288 study participants filled the questionnaires with a response rate of 100%. Hand hygiene compliance of nurses was found 79% having knowledge about hand hygiene compliance(AOR[95%CI]= 2.873[1.258, 6.56]),availability of soap and water(AOR[95%CI]= 0.324[0.155, 0.678]), availability of ABHR(AOR[95%CI]= 0.293[0.125, 0.686]), availability of towel/tissue paper(AOR[95%CI]= 3.314[1.587, 6.918]), were significantly associated with hand hygiene compliance.

- **Conclusions:** Nurses good hand hygiene compliance was indicated ‘after’ caring for a patient whereas poor hand hygiene compliance was reported ‘before’ having direct contact with a patient.
- Nurses hand hygiene practice was influenced by the knowledge they have for hand hygiene indications as per hand hygiene guideline.
- There was no statistical significant variations on hand hygiene practice score across nurses in different wards

Key word:hand hygiene practice; Knowledge; Nurses.

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ACRONYMS

ABHR= Alcohol Based Hand Rub

AOR= Adjusted Odds Ratio

BLSRH= Black Lion Specialized Referral Hospital

CDC= Center of Disease Control

COR= Crude Odd Ratio

CSA= Central Statistical Agency

HCAIs= Health Care Associated Infections

HBV= Hepatitis B Virus

HCV= Hepatitis C Virus

HH= Hand Hygiene

HHP= Hand Hygiene Practice

HHQ= Hand Hygiene Questionnaire

MOH= Ministry Of Health

MRSA= Methicillin Resistance Staffilo Aurous

NMC= Nursing and Midwifery Council

SPSS= Statistical Package for Social Science

INTRODUCTION

1.1. Back ground

Hand hygiene is a core element of patient safety for the prevention ofHealth care Associated Infections (HCAIs) and spread of anti microbial resistance.Its promotion represents a challenge that requires a multimodal strategy. Handhygiene prevents cross infection in hospitals, butHealth Care worker (HCWs)adherence to hand hygiene guidelines is poor. Easy, timely access to both handhygiene and skin protection is necessary for satisfactory hand hygiene behavior(1).

Alcohol based hand rub may be better than traditional hand washing as theyrequire less time, acts faster, are less irritating, and contribute to sustainedimprovement in compliance associated with decreased infection rates (1).

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. One of the most significant, current discussions in healthcare delivery in hospitals is HCAI, sometimes called hospital acquired infection (2) or nosocomial infections, HCAIs are defined as infections that occur as a result of health care interventions in any healthcare setting where care is delivered (3).

Hand washing is the most effective way of preventing the spread of infectious diseases. But despite a Joint Commission requirement that Centers for Disease Control and Prevention hand hygiene guidelines be implemented in hospitals, compliance among health care workers remains low(4).

The reasons of lack of compliance to hand washing include: lack of appropriate equipment, low staff to patient ratios, allergies to hand washing products, insufficient knowledge among staff about risks and procedures, the time required and casual attitudes among HCWs towards bio-safety(4).

The WHO strongly emphasize the essential need for hand hygiene during health care delivery, to avoid possible infection and subsequent complications; hence ‘ Clean Care is Safe Care ‘ programme was launched by WHO in 2005 as part of the ‘ First Global patient safety Challenge ‘ (5).With this regard in Ethiopia has also launched the SAVE LIVES: Clean Your Hands campaign under the leadership of the Ministry of Health (6).

In the developed world infection prevention programs that include hand-hygiene as a basic means have been implemented in every single hospital decades ago but this is not yet true for many countries in the developing world where infection control policies are not in place or poorly funded (7); nosocomial infection and colonization by Methicillin Resistant Staphylococcus Aurous have become increasingly common during the past two decades. Althoughhand hygiene methods are widely publicized and simple (8), the prevalence of these infections continues to rise and poses a challenge to healthcare providers. Healthcare associated infections due to poor hand hygiene has been linked to an unacceptably high level of morbidity, mortality and healthcare costs. In developing countries health care associated infection prevalence is found to be as high as 19% (9).

Hand hygiene should be considered before invasive procedures, after contact with contaminated devices or materials, and with high risk, infectious patients. Moreover, claim that hand hygiene should be advocated before beginning work, at the end of work, and after visiting the rest room (10).

The recommendation on hand hygiene has been updated, and hand washing has been replaced by hand-rub as the standard of care. It has been suggested that the optimal duration of hand washing is between 30 seconds and one minute as a minimum and a maximum range respectively (11). It is also demonstrated that alcohol-based hand antiseptics are used worldwide for their rapid antimicrobial effects, broad-spectrum coverage, better tolerability, and ease of application (11).

The hand hygiene practices of HCWs have longbeen the main vector for nosocomial infection in hospitals. So study to examineinfluences on risk judgment from the individual differences in knowledge levelsand health beliefs among HCWs is important (12).

1.2. Statement of the problem

Nurses are professionally and ethically accountable for their actions. The Nursing and Midwifery Council (NMC's) . Code of Standards and Conduct . requires nurses and midwives to . provide high standard of practice and care at all times (13). Yet, despite the momentum for hand hygiene, some nurses are still presenting with low compliance because they perceive it as not their problem, that it is something to do with infection control staff and they have to deal with it (14), (15).

Furthermore, Nazarkoindicates that nurses often fail to practice hand hygiene because they are busy and they feel hand hygiene takes up precious time(16).

In addition, nurses often perceive that gloves can be used as an alternative to hand hygiene. They usually tend to remove the gloves without washing their hands or use the same gloves to deliver intended care to multiple patients. Even when they remove their gloves, only 20% of nurses actually clean their hands (17). Moreover, Canham ,Kampf& Loffler claim that nurses avoid hand hygiene because they are frightened that skin problems such as dermatitis could develop, especially with alcohol hand-rubs(18,19).

Hand hygiene prior to and following patient contact is a key infection control strategy included in many official national and international infection control guidelines (20).

Most infection control programs in developing countries with limited resources are understaffed and hand washing depends mostly in having soap, towels, and sinks available (21).Poor compliance with hand hygiene is common among HCWs (21).

The provision of healthcare worldwide is always associated with a potential range of safety problems and patients remain vulnerable to unintentional harm in hospitals because of poor hand hygiene (22).

Over 1.4 million people worldwide suffer from infections acquired in hospital(23). More over annually in the United States,approximately 2 million patients develop HCAI, and nearly 90,000 of these patients are estimated to die; this ranks HAIas the fifth leading cause of death in acute care hospitals (24).

The burden is substantial in developed countries, where it affects from 5% to 15% of hospitalized patients in regular wards and as many as 50% or more of patients in intensive care units (25).In developing countries, the magnitude of the problem remains underestimated or even unknown largely because HCAI diagnosis is complex and surveillance activities to guide interventions require expertise and resources(26).

In Sub-Saharan countries the problems associated withpatient safety is often hampered by inadequate data.However, prevalence studies on hospital-widehealthcare-associated infection from some Africancountries reported high infection rates (Mali 18.9%,Tanzania 14.8%, Algeria 9.8%) with patients undergoingsurgery being the most frequently affected). In addition to HCAIs, developing countries are hit hard by HIV/AIDSpandemic hepatitis B virus and hepatitis C virusinfections .In resource-poor settings, rates of infection canexceed 20% (27).

Hospital wide health care associated infection prevalencevaried between 2.5% and 14.5% in Algeria, Burkinafaso,Senegal and Tanzania. Over all Health Care- associated infection(HCAI)

cumulative incidencein surgical ward ranges from 5.7% to 45.8 % in studiesconducted in Ethiopia and Nigeria. (28)

HAI 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 (29).

The same is true in Ethiopia that the HCAI is a major problem that needs attention and action to improve Hand Hygiene practice. Hence, Ethiopia in general and in Addis Ababa in particular, the problem of health care associated infection is attributed to be common in health institutions even though there was no detail study done in this area.

1.3. Significance of the study

Since nurses are present 24 hours a day, 7 days a week in the healthcare setting, it is essential to comply with hand hygiene policy and maintain patient safety.

Globally millions of people suffer from infections acquired in hospitals(23).On top of these, unless appropriate hand hygiene practice is not in place among Nurses, it justifies that they can be the source of infection for clients.

Yet, fewstudies were conducted among Nurses. Therefore; this study were designed to assess the practice and associated factors of hand hygiene compliance among Nurses. It aims to contribute in filling information gaps on the hand hygiene practice issue that uses for prevention of both Nurses and patients from getting hospital acquired infections so that morbidity, mortality and unnecessary excess medical costs are minimized; in addition it can also serve as base line information to undertake studies on similar settings.

2.LITERATURE REVIEW

the work of Florence Nightingale during the Crimean war, when she called for basic public health in a military hospital in Scutari in 1854. Herinterventions to improve personal hygiene, cleanliness in the hospital environment, living conditions and food, led to a decrease in the number of deaths. She was one of the first who identified the relationship between nursing and infection control (30).

Hand hygiene was thought to be a key factor in reducing hospital acquired infection (31). The battle with HAI started when the Hungarian obstetrician, Semmelweis, observed that puerperal fever was more common on a maternity ward, where physicians and medical students provided care to women in labour, than it was on the ward where midwives assisted deliveries. He noted that physicians and medical students were contaminating their hands while performing autopsies and later attending the examination of women without hand washing (29).

Despite high magnitude of HAI and the importance of adherence to infection control policies, proper hand hygiene practice has remained unacceptably low (15). Hand hygiene compliance rates in different developed countries rarely exceed 50% (30). For instance, figures show that in the USA it is 50%, in Switzerland 42% and in the UK 32% (32). Hence, poor compliance has resulted in high morbidity and mortality. In the USA, there are between 1.7 and 2 million people who contract HAI and 88 to 99 thousand deaths are attributed to HAI annually. Furthermore, HAI affects nearly 10% of hospitalized patients and presents major challenges in healthcare facilities. Consequently, annual medical expenses have increased in the USA to approximately $ 4.5 billion (24).

In Canada approximately 8 thousand patients die from HAI annually. Canadian hospitals spend up to $100 million per year treating patients with HAI (4). European countries also have a high percentage of HAI: in the UK, for example, each year approximately 9% of people admitted to hospital contract HAI; this is one of the highest percentages in Europe (34)**.** The estimated number of deaths due to HAI among hospitalized patients in the UK is 500 patients annually (32). The situation is even worse in developing countries including Ethiopia, where resources and facilities are limited.

A number of factors have been reported to contribute to poor hand hygiene compliance including limited availability and accessibility of hand hygiene facilities such as sinks, time required to

perform hand hygiene, patient‘s condition, effects of hand hygiene products on the skin and inadequate knowledge of the guidelines heavy workloads, performing activities with cross-transmission, glove use, discourage. In developing settings, inadequate access to soap and water, and limited provision of sinks are hindrance to perform hand hygiene at the points of care (12).

In an observational study, which measured the rates of compliance of hand hygiene before and during implementation of a program of hand hygiene improvement in Geneva, Switzerland; resulted in an increase in the rate of compliance from 48% to 66% over a three-year period and significant decreases in the number of hospital acquired infections from 29% to 17% and Meticillin Resistance StaffilococcusAuros (MRSA) carrier or attack rate of MRSA(35).

According to researchers the results from a survey conducted across 14 developing countries to evaluate the problem and size of HAI, showed a wide range of nosocomial infection, from 3 – 13.4% in different hospitals (36). However, another study conducted in developing countries, have reported a higher rate of HAI, 6 – 27%(13). In our setting, 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 (37).

2.1.Knowledge of hand hygiene

In a French study of 350 students, including 107 medical students, nursing students had a better overall score compared to medical students in the knowledge of hand hygiene, standard precautions and nosocomial infections (38).

In Birmingham, UK, medical students were assessed for their knowledge of HAI, of which 48% participated**.** This study assessed knowledge of hand hygiene, the use of gloves, venipuncture. Just under half felt that not enough emphasis was placed on infection prevention and control. Again, on assessment of knowledge of nearly 500 medical students in Iran, scores were approximately 66% (39).

In Saudi Arabia the average awareness regarding the positive indications of hand hygiene was 56%. Rests of the 44% of students were either not sure or unaware of the indications of hand hygiene; only 29% of students were able to identify all the five indications for hand hygiene in the questionnaire(40).

In a Greek study on practices of hand hygiene found that nursing students scored higher overall in terms of knowledge but the delivery of education on hand hygiene was different between medical and nursing students. Nursing students had more lectures, tutorials and lecture notes compared to the medical students, and there was a greater use of published guidelines, posters and the internet amongst nursing students (41).

2.2.Hand hygiene practices

Among different hospital specialties, intensive care units (ICU) are consistently found to have the highest prevalence rate of HAIs, ranging from 13-26% [17-20], when compared to the usual figure of 5-10% reported in other units in the hospitals, [21-24]. Yet, HCWs in intensive care units were also having the lowest Hand Hygiene (HH) compliance rate (36%, median=40%-50%) when compared with staffs working in other specialties (median=50-60%) (42).

with regard to gender, hand hygiene was performed by male students on 24 out of 144 occasions (compliance—16.7%) and by females on 17 out of 96 occasions (compliance—17.7%) resulting in average compliance of 17% indicates that females had better hand hygiene practices than males(41) and different scholars has been noted as there was no association between hand hygiene practice and HCWs‘ age (43).

It is therefore important that practitioners are provided with appropriate education, training and support to enhance knowledge, understanding and skills in order to increase the safety and quality of care delivered to patients (44). To overcome barriers of hand hygiene compliance, it is widelyacknoledged that hand hygiene education is the cornerstone of effective practice (45). However, factors associated with poor hand hygiene during clinical years‘ of training has not been investigated.

In conclusion several studies indicated that failure to perform appropriate hand hygiene is considered to be the leading cause of health care–associated infections and the spread of multidrug-resistant microorganisms.

2.3.Factors influencing hand hygiene compliance

Factors that may influence poor compliance to hand hygiene have been determined objectively in several epidemiological and observational studies. In the survey conducted so far, investigators

identified predictors of poor compliance to recommended hand hygiene measures during routine patient care.

Predicting variables include professional category, working in an intensive-care unit, being male hospital ward, time of day/week, and type and intensity of patient care, skin irritation caused by hand hygiene agents, inaccessible hand hygiene supplies, interference with HCW–patient relationships, patient needs perceived as a priority over hand hygiene, wearing of gloves, forgetfulness, lack of knowledge of guidelines, lack of recognition of hand hygiene opportunities during patient care, and lack of awareness of the risk of cross-transmission of pathogens, insufficient time for hand hygiene, high workload and understaffing, lack of role models and lack of scientific information showing a definitive impact of improved hand hygiene on HAI rates, lack of knowledge about the appropriateness, efficacy and understanding of the use of hand hygiene and skin care protection agents contribute to poor hand hygiene performance.

At the institutional level; the lack of written hand hygiene guidelines, available or suitable hand hygiene agents, skin care promotion/agents or hand hygiene facilities, lack of culture or tradition of adherence, and the lack of administrative leadership, sanctions, rewards or support, lack of institutional priority for hand hygiene, lack of institutional safety climate, and lack of active participation in hand-constitute barriers to good hand hygiene promotion at individual or institution level, and lack of an institutional safety climate hygiene compliance.

According to United States Centers of Disease Control and Prevention Control (CDC) and WHO, ‘ Hand hygiene is the single most important means of preventing the spread of infection. ‘ The CDC guideline specifies that hand hygiene should occur with any patient contact and HCW‘s hand should be washed with a non-antimicrobial soap and water or, an antimicrobial soap and water when hands are visibly soiled, or contaminated. If hands are not visibly soiled, HCW‘s can use an alcohol-based hand rub for routinely decontaminating hand in clinical situations as described in literature

The CDC (2009) guidelines make a number of recommendations in relation to hand hygiene, these are:

• Visibly dirty hands should be cleansed via hand washing with water and soap or an antiseptic agent, because hand rubs whilst having an antiseptic action, do not remove soil from the hands. The rinsing action of hand washing is required in this instance.

• Routine hand washing, for example prior to patient contact, requires hands to be washed for a minimum of 15 seconds with water and an antiseptic agent.

• Health care workers should use hand creams to reduce the incidence of skin damage, as damaged skin harbors more microorganisms than undamaged skin.

• Health care workers should not use hot water to wash their hands as it has a drying, damaging effect on the skin.

• After application of an alcohol-based hand rub, the hands should be rubbed together until dry.

• Following hand washing, the skin can be dried with paper towel or single use cloth towel, but multiple-use cloth towels of the hanging or roll type should be avoided.

• If hands are not visibly soiled or contaminated with blood, body fluids or other proteinaceous material, alcohol-based hand rubs should be used prior to and following direct patient contact, prior to donning and after removing gloves, prior to non-surgical insertion of invasive devices, following contact with bodily excretions and wound dressings, and after contact with inanimate objects in the immediate vicinity of the patient.

Hand hygiene is the single most clinical and cost effective measure for reducing the risk of transmission of infectious diseases in healthcare setting worldwide (46).A great deal of research has been conducted examining factors influencing health care workers' compliance with hand hygiene guidelines, there is no research on Nursing ' hand hygiene practice and associated factors in the Ethiopian setting. Therefore the purpose of this study is to assess hand hygiene practice and factor affecting compliance among nurses.

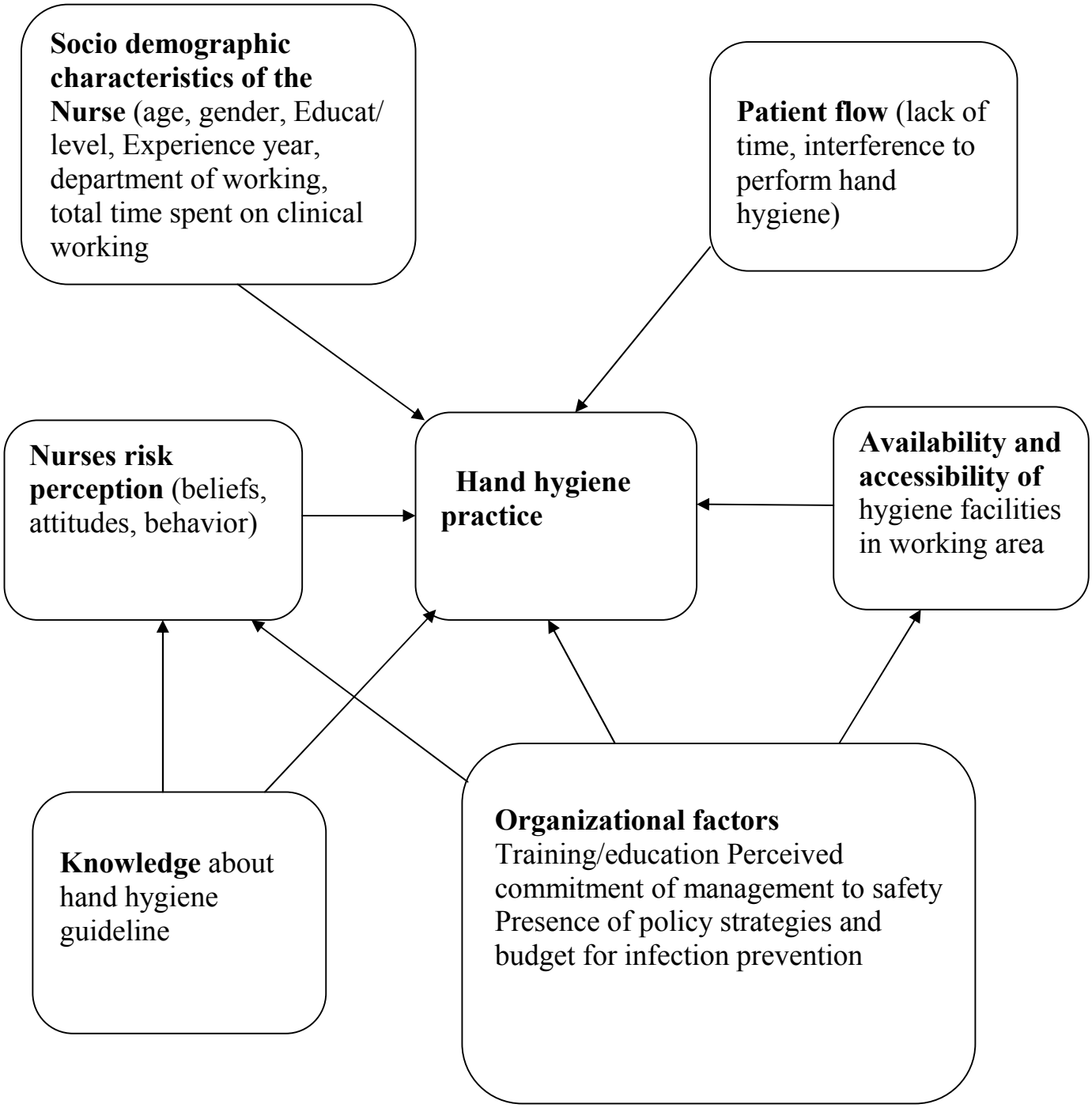


Figure 1 Conceptual framework adopted from social cognitive theory (47)

3.OBJECTIVES

3.1. General objective:

To assess the hand hygiene practices among Nurses in Black Lion Specialized Referral Hospital, Addis Ababa Ethiopia, 2017 G.C.

3.2. Specific objective:

1. To describe the hand hygiene practices among Nurses in Black Lion Specialized Referral Hospital, Addis Ababa Ethiopia, 2017G.C.
2. To assess the reasons for non compliance in hand hygiene practices among Nurses in Black Lion Specialized Referral Hospital, Addis Ababa, Ethiopia, 2017.
3. To assess knowledge of nurses in Black Lion Specialized Referral Hospital, Addis Ababa, Ethiopia, 20017.

4.METHODOLOGY

4.1. Study Area and period

The study was conducted from March 1to April 1, 2017.

This study was conduct at Black Loin Specialized Referral Hospital (BLSRH). BLSRH was chosen since it is currently available tertiary teaching hospital in Ethiopia, which is found in Addis Ababa Ledetakefeleketema. Addis Ababa is the capital city of Ethiopia. The hospital has different units and departments which occupy different type of health workers among thus 820 of them are nurses .

4.2.Study Design

Institutional based cross-sectional quantitative study design was conducted to assess hand hygiene practice and factor affecting compliance among nurses.

4.3 Population

4.3.1. Source population

The source populations were all health workers who are working in BLSRH.

4.3.2. Study Population

The study populations wereallNurses who are working in Black Lion Specialized referral Hospital.

4.3.2.1. Inclusion Criteria

The Nurses, Who are selected by simple random sampling technique, work at least for one month before commencement of the study was recruited,

4.3.2.2. Exclusion criteria

Nurses those who have sick, newly enrolled nurses with less than six months of stay in working area, and refuse to participatewas immediately be excluded from the study.

4.4. Sampling4.4. 1.Sample Size Determination

The actual sample size for the study was determined by using the formula for single population proportion by assuming 5% marginal error (d), 95% confidence interval, (alpha=0.05) and ,

p=50% the previous research not done on this issue. Based on the above information the total initial sample size was calculated by using the formula;

$$ni = \frac{(Z\frac{\alpha}{2})^2 pq}{d^2}$$

Where;

n_i =require initial sample size,

$Z\frac{\alpha}{2}$ =critical value for normal distribution at 95 % confidence interval which equals to 1.96

(Z value at alpha =0.05)

P= proportion of the Nurses who are aware of Nosocomial infection

q=proportion of the Nurses who are not aware of Nosocomial infection.

d= marginal error (0.05).

$n_i = \frac{(1.96)^2 \times (0.5)(0.5)}{(0.05)^2} = 384 n_i = 384$

Since the sampling was calculated from finite population (N<10,000), it will need finite population correction. Therefore; by using correction formula, final (n_f) sample size were:

$$n_f = \frac{n_i}{1 + \frac{n_i}{N}}$$

$$n_f = \frac{384}{1 + \frac{384}{820}} = 261.54 n_f = 262$$

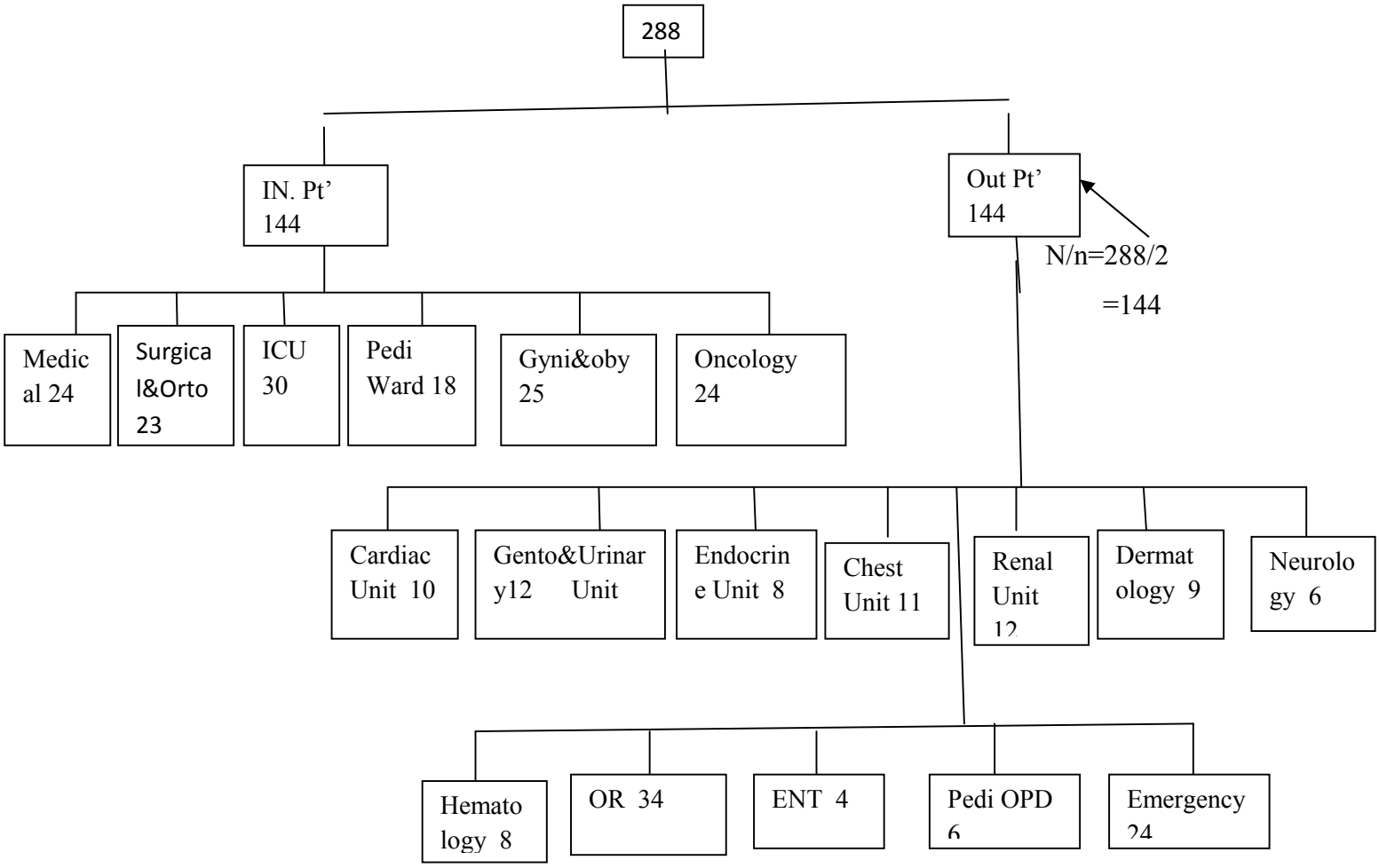
Where n_f is the final sample size, n_i is the initial sample size determine using the above formula and N is the size of the source population during data collection 820 By considering 10% non response rate, the total sample size were288.

(I.e.n_f= 262+ $\frac{262x10}{100}$ = 288.2

4.4.2. Sampling Procedure

288 samples were selected by using simple random(Lotterymethod) according to clinical area of participants in divided department.

Figure 2. Schematic representation of sampling procedure



Key

-N=Total sample size

-n= the selected nurses in the OPD and ward

4.5. Study Variables

4.5.1. Dependent variables

In this study the dependent variables were:

- hand hygiene practice

4.5.2. Independent variables

In this study the independent variables were:-

- Socio demographic factor; gender, age, department, total time spent on clinical working, educational level, experience year, department of working.
- Patient flow; lack of time, interference to perform hand hygiene.
- Nurses Risk perception; beliefs, attitudes, behavior.
- Availability of accessibility of Hygiene facilities in working.
- Knowledge about hand hygiene guideline.
- the mean value The reasons for noncompliance in hand hygiene practice

4.6. Method of data collection

English version structured questionnaire were used (Annex-I). Data were collected by two data collector and two supervisors who have Bsc, in Nursing using pretested questionnaire in different department; the questionnaire were filled by 288 of the participant.

Data was collected on outcome variable hand hygiene practices and associated factors;

Socio-demographic factors, knowledge, predictors as depicted in the conceptual framework (Figure 1)

The questionnaire is constructed to find out how far the current hand hygiene practices were in line with standard recommended hand hygiene guidelines(23) and consists of hand hygiene knowledge (12 items) via yes/no, nurses‘ hand hygiene practices and via 5-point Likert scales named the hand hygiene practices (HHP) (14 items). Although in recent previous studies, questionnaire validation are described in van de Mortel (50) on this study also its reliability and validity was checked found reliability of the hand hygiene knowledge score (0.57), HHP (0.84), using Cronbach‘s alpha.

Across the whole sample, the scale alpha levels were between 0.57 and 0.84, which were considered acceptable to good (51) .

Following sign consent to participate; the information and data was collected by using a hand hygiene practice assessment tool and through self administered questioner respectively.

4.7. Operational Definition

1 .Hand hygiene compliance: - refers to hand hygiene practice before, during and after any contact with a patient or with the inanimate material.

2.Good hand hygiene compliance: - Nurses who scored greater than or equal to mean score of the total hand hygiene practice questions value (48).

3.Poor hand hygiene compliance: - Nurses who scored less than mean score of hand hygiene practice questions value (48).

4.Good Knowledge: - refers to Nurses who scored the mean and above

of the knowledge questions**.**

5.Poor knowledge: - refers to Nurses who scored below the mean of the total

knowledge questions value.

4.8. Data processing and analysis

The collected data were checked visually for its completeness and the response were coded and entered into the computer using EPI info version 3.5.1. Statistical package, and the 10% of the response were randomly selected and check for the consistency of data entry. Then data were exported to windows of Statistical Package for Social Science (SPSS) version 20 for data analysis.Descriptive statistics, bivariate logistic and multivariate logistic regression analysis were done to see association between factors and hand hygiene practice.And were computed to determine the frequencies, percentages and mean of the dependent and or independent variable.

Crude odds ratio with 95% confidence intervals and significance level at $P< 0.05$ were used to see the association between factors and hand hygiene practice. Variables with 95% confidence interval and P value at <0.25 during the bivariate analysis were included in the multivariate logistic regression analysis to see the relative effect of confounding variables and interaction of variables. Adjusted odd ratios with 95% confidence interval werecalculated. The data was displayed by tables and in text.

Descriptive statistics (range, mean) were calculated for variables; for each of the scales, the range of scale means and sample mean scores was calculated, and the mean item scores werecalculated. Recoding, transforming, and re-categorizing of variables was done to compute

some of the analysis. The higher the mean of the HHP score, the more positive the nurse‘s hand hygiene. A score of more than 75% were considered good, 50-74% moderate and less than 50% poor (49).

4.9. Data quality control

- Each questionnaire was checked for completeness, missed values and unlikely responses; those incomplete questionnaires were omitted from the analysis.
- Training was given for two Bsc nurse supervisors on aspect of data collection tools, ethical issues, and role play on how to fill the questionnaire.
- Principal investigator and supervisors made spot-checking and reviewing the complete questionnaires by the data collectors ensures completeness and consistency of the information collected; before the actual data possessing reentry of 5% of the data to EPI INFO software package wasmade to maintain the data quality.
- The pre- test was checked the validity and reliability of the questionnaire for tow wks.

4.10. Ethical consideration

In order to follow the ethical and legal standards of scientific investigation, this study was conducted after approval of the proposal by Addis Ababa University institutional review board and ethical approval and clearance were obtained from this board.Permission and supportive letter was obtained from respective hospital chief executive officer and nursing director, before data collection. Participation was voluntary and information also was collected anonymously after obtained verbal consent from each respondent by assuring confidentiality throughout data collection period. Participants also were told the objective of the study and their right to refuse answers the questionnaires and were given the right to stop or withdraw at any time of data collection.

4.11. Dissemination of the results

The primary objective of this study was for partial fulfillment in the requirements to degree of master in adult health; The result it will be submitted to the Department of Nursing and Midwifery, College Of Health Science, Addis Ababa University, Ministry of Health, Black Lion Specialized Hospital and other stakeholders . It will be presented at professional, local, national and international meetings and publication in peer reviewed national or international journals were attempt.

5. RESULTS

Socio- demographic characteristics

A Total of 288 nurses filled out the self- administered questionnaire with response rate 100%. Mean age(±SD) of the respondents were 28.61± 6.3 years, 29.2% were male and 70% were female, the mean oftotal time spent on working was 51.29± 10.085 and year of their experience was 1.63± 0.993. Majority of the respondents 63.9% were Orthodox Christians. (Table 1)

Table 1: Distribution of Sociodemographic characteristics of respondents in Black Lion Specialized Hospital; Addis Ababa, Ethiopia, April 2017 (n=288).

Variable		Frequency	Percentage %	Mean	S. D	Minimum Maximums
sex	Female Male	204 80	70.8 29.2	1.29	0.455	(1- 2)
Age	≤28 >28	196 92	68 32	28.61	6.299	(22- 54)
Religion	Orthodox Muslim Protestant Catholic Other	184 24 56 12 12	63.9 8.3 19.4 4.2 4.2	1.76	1.151	(1- 5)
Total Time spent	<48 >48	108 180	37.5 62.5	51.29	10.085	(20-72)
Year of experience	1-5 5-10 >11	184 60 44	63.9 20.8 15.3	1.63	0.994	(1-4)
Department	Medicine Surgery Gynecology Pediatrics Other	64 40 48 52 84	22.2 13.9 16.7 18.1 29.2	3.18	1.533	(1-5)

Two hundred forty eight (86.1%) assured the presence of alcohol based hand rub, 72(25.0%) reported that the presence of individual towel or tissue paper for drying in their working area, 200(69.4%) reported availability of soap and water in working ward, 224(77.8%) reported availability of sink in working ward, 280(97.2%) reported availability of glove in the ward.(Table 2)

Regarding knowledge on the presence of infection prevention committees, 144(50.0%), of the respondents knew the presence of infection prevention committees.(Table 2)

Table 2: Distribution of environmental factors among nurses in Black Lion Specialized Hospital; Addis Ababa, Ethiopia, April 2017(n=288).

Variable	Frequency	Percentage%
Hospital promoting the importance of hand hygiene		
Yes	232	80.6
No	56	19.4
Availability of soap and water		
Yes	200	69.4
No	88	30.6
Availability of sink in		
Yes	224	77.8
No	64	22.2
Availability of towel/tissue paper		
Yes	72	25.0
No	216	75.0
Availability of Alcohol based hand rub		
Yes	248	86.1
No	40	13.9
Availability of glove		
Yes 280 97.2		
No	8	2.8
Knew presence of infection prevention committees		
Yes	144	50.0
No	144	50.0

Knowledge of nurse

Over all, Nurses knowledge scores ranged from 0%(0/12) to 100%(12/12), and mean score was 8.06.

One hundred seventy two, (59.72%) of the respondents have good knowledge on hand hygiene guideline and (40.7%)of the respondents have poor knowledge as shown in Figure 4.

Bivariate logistic regression analysis looking at the association between knowledge of WHO guidelines and quality of hand hygiene practices is displayed on (Table 3).

It was Identified that nurses who were familiar with the hand hygiene guidelines were more likely to disinfect their hands after having any direct contact with their patients, following emptying of a drainage reservoir, and prior to and following venipucture, following the removal of gloves after patient contact, Alcohol- based hand rubs will still be effective if applied for less than 60 seconds, following contact with the bed linen of a patient with MRSA.

Percentage of hand hygiene knowledge correct answer of nurses list on(table 3) and Figure 3.

Table3:Bivariate analysis of Comparing Knowledge with appropriate hand hygiene across Nurses in Black Lion specialized referral Hospital; Addis Ababa Ethiopia, April 2017(n=288)

Indication of hand hygiene	**Possible Response**	**Nurses w/c Are participated**	**Hand hygiene practice Poor/<1.78**	**Good/>1.78**	**Odds Ratio**
ABHR should not be used When hand hygiene are visibly soild	Yes No	220(76.38) 68(23.81)	24(8.33) 36(12.5)	196(68.05) 32(11.1)	0.126(0.058, 0.277) 1
ABHR will still be effective if appli ed for less than 60 seconds	Yes No	168(58.33) 120(41.66)	20(6.94) 40(13.88)	148(51.38) 80(27.77)	0.217(0.092, 0.512) 1
Hand hygiene is required following The removal of gloves after patient contact	Yes No	276(95.83) 12(4.16)	56(19.44) 4(1.38)	220(76.38) 8(2.77)	1.562(0.186, 13.119) 1
Single- use cloth towels and paper	Yes No	212(73.61) 76(26.38)	44(15.27) 16(5.55)	168(58.33) 60(20.83)	1.244(0.453, 3.417) 1
Hand hygiene must be performed Before patient, contact	Yes No	260(90.27) 28(9.72)	52(18.05) 8(2.77)	208(72.22) 20(6.94)	0.517(0.103, 2.582)
When using an ABHR to decontami nate hands they should be rubbed Together until dry	Yes No	224(77.77) 64(22.22)	36(12.5) 24(8.33)	188(65.27) 40(13.88)	0.892(0.377, 2.112) 1
Handling of paper work is not one Of the recommended situations	Yes No	68(23.61) 220(76.38)	16(5.55) 44(15.27)	52(18.05) 176(61.11	0.893(0.389, 2.050) 1
Hand hygiene is required following Contact with the bed linen of a Patient with MRSA	Yes No	232(80.55) 55(19.09)	40(13.88) 19(6,59)	192(66.66) 36(12.5)	0.930(0.358, 2.417) 1
Hand creams and lotions are Recommended for health workers' hands	Yes No	220(76.38) 68(23.61)	28(9.72) 32(11.11)	192(66.66) 36(12.5)	0.150(0.060, 0.372) 1
Gloves should not be reused when Caring for different patient	Yes No	252(87.5) 36(12.5)	48(16.66) 12(4.16)	204(70.83) 24(8.33)	0.765(0.218, 2.617) 1
The average cost of a hospital- aqu Ired infection in developed countries Is approximately $ 10,000*	Yes No	68(23.61) 220(76.38)	4(1.38) 56(19.44)	64(22.22) 164(56.94)	0.318(0.073, 1.376) 1
Approximately 20% of intensive Care patients develop HAI indevelo Ped countries	Yes No	117(40.62) 171(59.37)	25(8.68) 35(12.15)	92(31.94) 136(47.22)	2.139(0.854, 5.360) 1
Over all Good knowledge Poor knowledge		**172(59.72) 116(40.27)**	**51(17.70) 9(3.12)**	**121(42.01) 107(37.15)**	**5.011(2.356-10.660) 1**

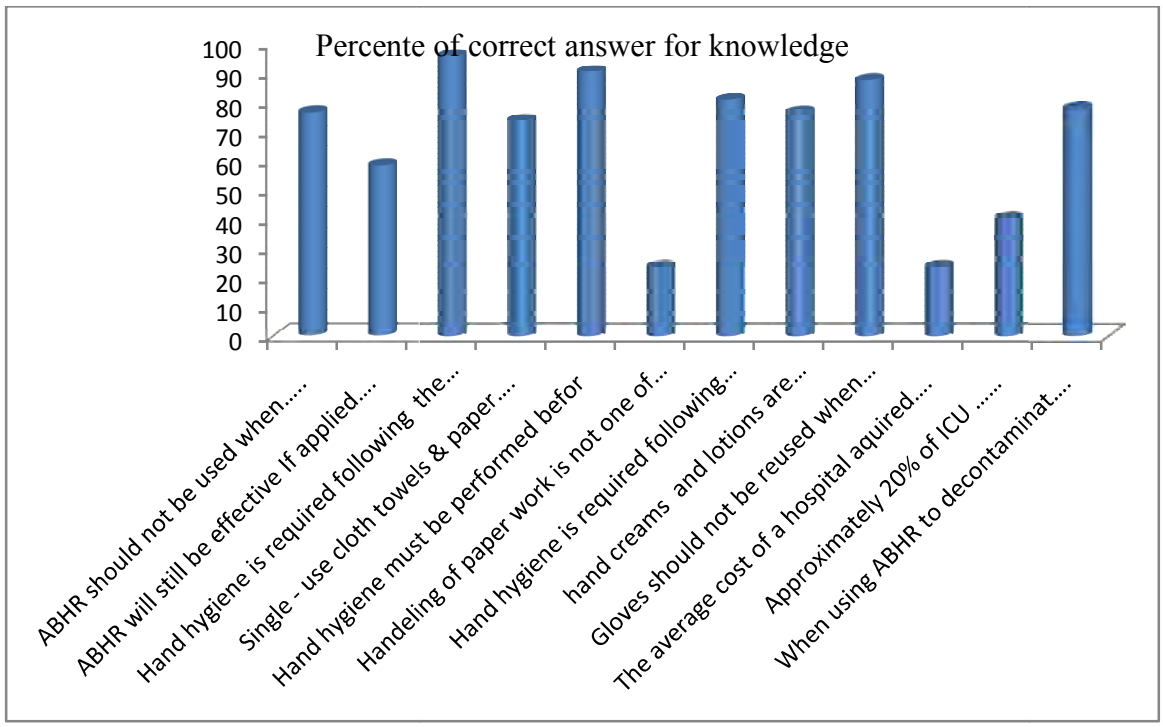


Figure 3: percentage of Hand hygiene knowledge correct answer of nurses at Black Lion Specialized Referral Hospital; Addis Ababa, Ethiopia, April 2017.

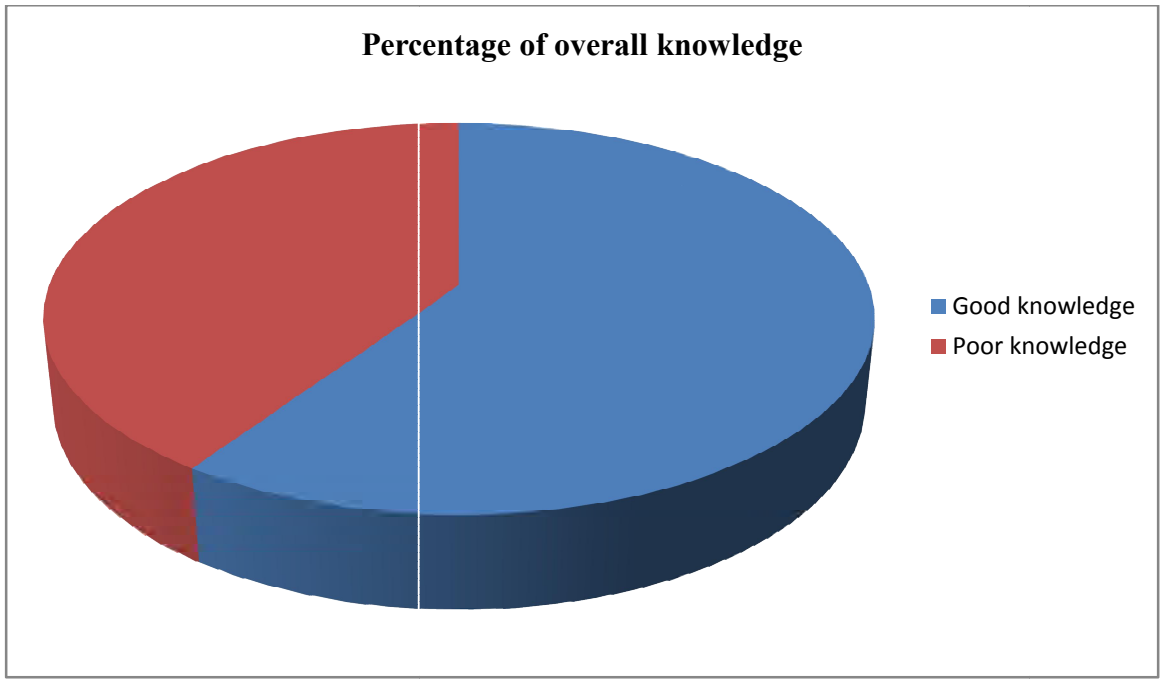


Figure 4: percentage of overall knowledge of hand hygiene among nurses in Black Lion specialized Referral Hospital; Addis Ababa, Ethiopia, April 2017.

Nurses hand hygiene practice

Across the whole sample the average score on the hand hygiene practice indicate that nurses reported always clean their hands in the indicated situations (Table 4). Nurses were most likely to report performingafter touching potentially contaminated objects; after contact with blood/body fluids, after going to the toilet, after contact with suctioning. Nurses were least likely to perform before patient contact.

Nurses mean score on the hand hygiene practice ranged from 1 to 2 point scale ($\bar{x}$=1.78 ±0.271); percentage mean scores for individual scale items are shown in (Table 5) and (Figure 5) and ranged from 1.56/2(before patient contact) to 1.83/2(after contact with blood or body fluids).The overall hand hygiene compliance was found 79.2% and poor hand hygiene compliance was 20.8% as shown on (Figure 6). Results from the Bivariate analysis showed the hand hygiene practice among nurses were statistically significant ($p<0.012$) (Table 8).

Table 4: Self- reported practices of hand hygiene among nurses in Black Lion Specialized referral Hospital; Addis Ababa, Ethiopia, April 2017

I cleanse my hand	Never n (%)	Always n (%)
After going to the toilet	4(1.4)	284(98.6)
Before caring for a wound	68(23.6)	220(76.4)
After caring for a wound	16(5.6)	272(94.6)
After touching potentially contaminated objects	0(0)	288(100)
After contact with blood/body fluids	0(0)	288(100)
After inserting an invasive device	16(5.6)	272(94.4)
Before entering an isolation room	124(43.1)	164(56.9)
After contact with a patient's skin	48(16.7)	240(83.3)
After exiting an isolation room	68(23.6)	220(76.4)
Before endotracheal Suctioning	64(22.2)	224(77.8)
After contact with a patient's suctioning	0(0)	288(100)
Before patient contact	128(44.4)	160(55.6)
After removing gloves	28(9.7)	260(90.3)
If they look or feel dirty	28(9.7)	260(90.3)

Table 5: Means scores on practices of hand hygiene across nurses in Black Lion Specialized Referral Hospital; Addis Ababa, Ethiopia, April 2017 (n 288)

I clean my hands	Nurses w/c are participated	%
After going to the toilet	1.99(0.117)	99
Before caring for a wound	1.76(0.425)	88
After caring for a wound	1.94(0.229)	97
After touching potentially contaminated objects	2.00(0.000)	100
After contact with blood/ body fluids	2.00(0.000)	100
After inserting an invasive device	1.94(0.229)	97
Before entering an isolation room	1.57(0.496)	78.5
After contact with a patient's skin	1.83(0.373)	91.5
After exiting an isolation room	1.76(0.425)	88
Before endotracheal Suctioning	1.78(0.416)	89
After contact with a patient's secretions	2.00(0.000)	100
Before patient contact	1.56(0.498)	78
After removing gloves	1.90(0.297)	95
If they look or feel dirty	1.90(0.297)	95
Over all	1.78(0.271)	92.5

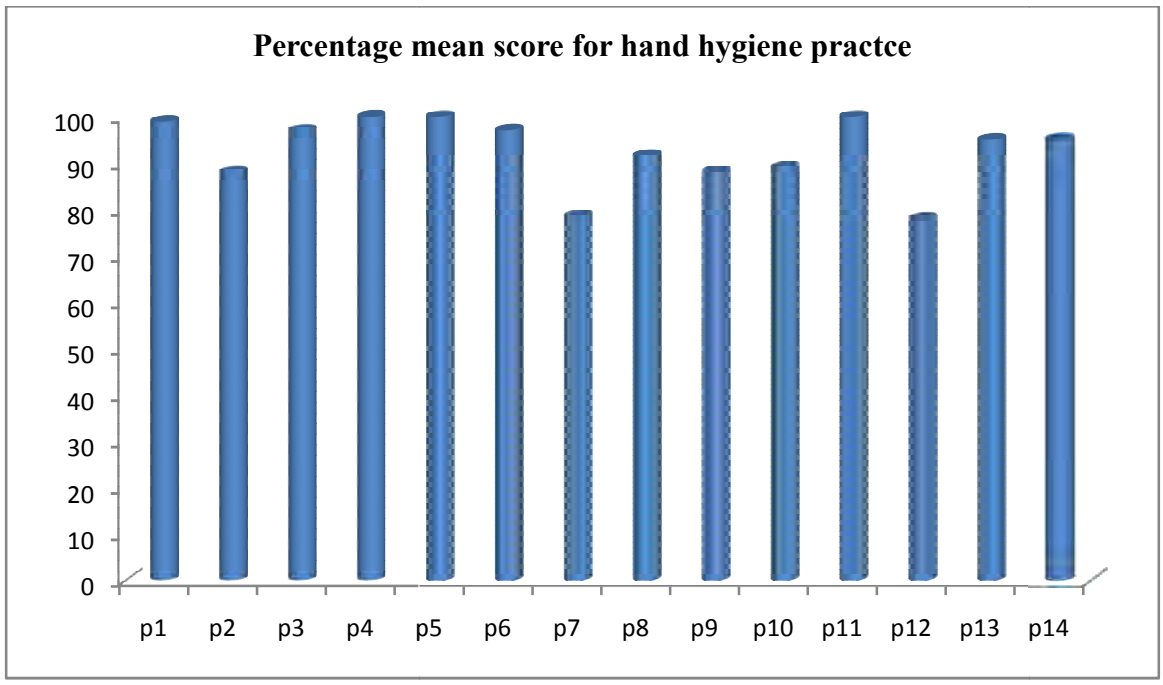


Figure 5: Percentages of mean score on practice of hand hygiene among nurses in Black Lion Specialized Referral Hospital, Addis Ababa, Ethiopia, April 2017.

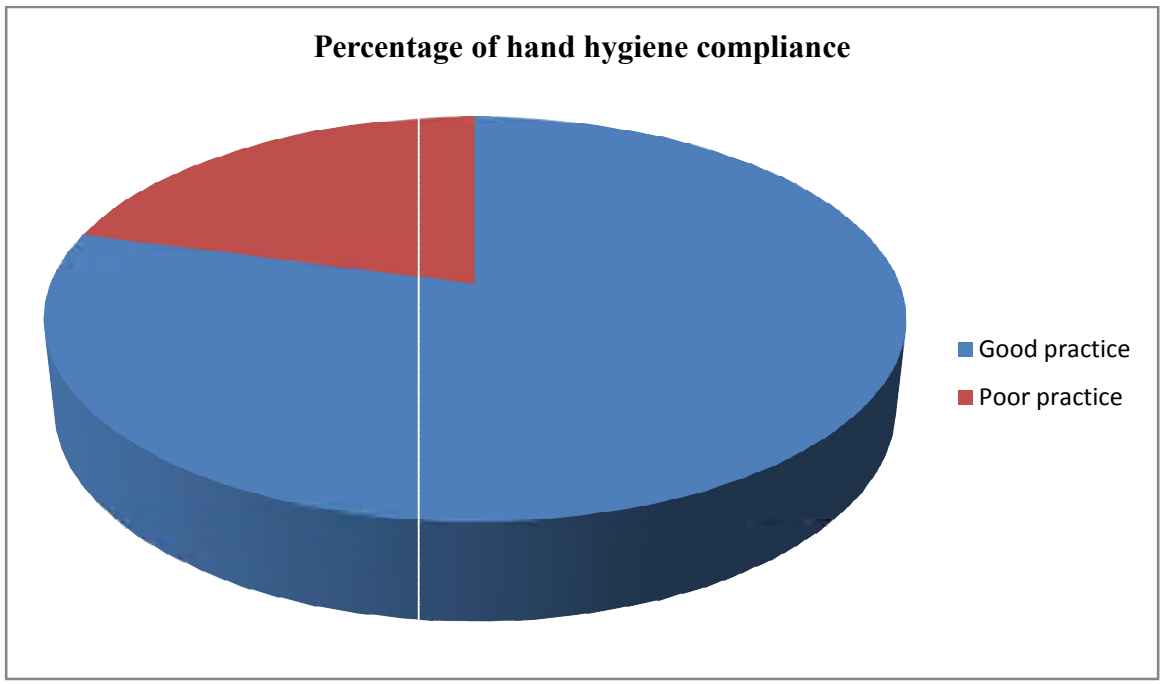


Figure 6: Percentage of hand hygiene compliance among nurses in Black Lion Specialized Referral Hospital; Addis Ababa, Ethiopia, April 2017.

Factors associated with hand hygiene practice; Bivariate analysis

Table 6presents the selected socio- demographic variables and their relation to the hand hygiene practice. Sex, religion, total time spent, and year of experience didn't show significant association with hand hygiene practice. Age and working area (department) shows significant association with hand hygiene practice.

Table 7 indicates the bivariate analysis of environmental condition with respect to hand hygiene practice. Hospital promoting the importance of hand hygiene, availability of sink, availability of glove, and knowing presence of infection prevention committee didn't show significant association with hand hygiene practice. Availability of soap &water ,towel/ tissue, and alcohol shows significant association with hand hygiene practice.

Age (COR[95%CI]= 0.903[0.83, 0.979]), and working area(medical department), (COR[95%CI]= 1.670[1.321, 2.113]) did show significant association to the hand hygiene practice. (Table 6)

Availability of soap and water (COR [95%CI]= 0.208[0.097, 0.444]), Availability of towel/tissue (COR[95%CI]= 5.081[2.380, 10.848]), Availability of alcohol (COR[95%CI]= 0.288[0.125, 0.664]) did show significant association to the hand hygiene practice.(Table 7)

Table 6: Association of hand hygiene practice with socio- demographic factors among nurses in Black Lion Specialized Referral Hospital; Addis Ababa, Ethiopia, April 2017(n= 288).

Variables		Hand hygiene practice Good/≥1.78/	Poor/<1.78/	COR	P-value
Sex	Female	156(54.1)	48(16.6)	1.609(0.746-3.471)	0.226
	Male	72(25)	12(4.1)	1	
Age	<28	156(54.1)	40(13.8)	0.903(0.833-0.979)	0.226
	>28	72(25)	20(6.9)	1	
Religion	Orthodox	156(54.1)	28(9.7)	0.801(0.617-1.041)	0.097
	Muslim	20(6.9)	4(1.3)		
	Protestant	32(11.1)	24(8.3)		
	Catholic	12(4.1)	0(0)		
	Other	8(2.7)	4(1.3)		
Department of working	Medicine	32(11.1)	32(11.1)	1.670(1321-2.113)	0.00
	Surgery	32(11.1)	8(2.7)		
	Gyn/obs	48(16.6)	0(0)		
	Pediatrics	46(16.6)	4(1.3)		
	Other	68(23.6)	16(5.5)		
Totaltime spent	<48	88(30.5)	20(6.9)	0.979(0.943-1.016)	0.254
	>48	140(48.6)	40(13.8)	1	
Year of experience	1-5	144(50)	40(13.8)	1.201(0.72-2.002)	0.482)
	5-10	56(19.4)	4(1.3)		
	>11	28(9.7)	16(5.5)		

Table 7: Association of hand hygiene practice with environmental factors among nurses in Black Lion Specialized Referral Hospital; Addis Ababa, Ethiopia, April 2017(n= 288).

Variables	hand hygiene practice		COR(95% CI)	P. Value
	Good/≥1.78/	Poor/<1.78/		
Hospital promoting the importance of hand hygiene				
yes	184(63.8)	48(16.6)	1.742(0.699,4.346)	0.234
no	44(15.2	12(4.1)	1	
Availability of soap and water				
yes	172(59.7)	28(9.7)	0.208(0.097,0.444)	0.000
no	56(19.4)	32(11.1)	1	
Availability of sink in ward				
Yes	180(62.5)	44(15.2)	0.658(0.300, 1.444)	0.297
no	48(16.6)	16(5.5)	1	
Availability of towel/tissue paper				
yes	48(16.6)	24(8.3)	5.081(2.380,10.848)	0.000
no	180(62.5)	36(12.5)	1	
Availability of alcohol based hand rub				
yes	208(72.2)	40(13.8)	0.288(0.125,0.664)	0.004
no	20(6.9)	20(6.9)	1	
Availability of glove in the ward				
Yes	220(76.3)	60(20.8)	1(0.000)	0.999
no	8(2.7)	0(0)		
Knew presence of infection prevention committees				
yes	116(40.2)	28(9.7)	0.942(0.489,1.814)	0.857
no	44(15.2	12(4.1)	1	

Factors associated with hand hygiene practice, Multivariate analysis

To avoid excessive number of variables that reached p- value less than 0.25 during the bivariate analysis were included in the multivariate logistic regression analysis to see the relative effect of co founding variables. The multivariate logistic analysis identified having knowledge of hand hygiene guideline (AOR [95%CI]= 2.873[1.258, 6.561]), availability of soap and water(AOR[95%CI]= 0.324[0.155, 0.678]), Availability of towel/tissue(AOR[95%CI]= 3.314[1.587, 6.918]), Availability of alcohol (AOR[95%CI]= 0.293[0.125, 0.686]) showed significant association with hand hygiene practice. But Sex (AOR[95%CI]= 0.662[0.283, 1.548]), Age(AOR[95%CI]= 0.960[0.915, 1.006]), Hospital promoting the importance of hand hygiene(AOR[95%CI]= 1.488[0.569, 3.892]) didn't show significant association with hand hygiene practice (Table 8).

The odds of having hand hygiene practice in nurses who have good knowledge were 2.8 times higher than who have poor knowledge (AOR [95%CI[= 2.873[1.258, 6.561]).

Table 8: Summary of logistic regression analysis of socio- demographic, knowledge and environmental factors on hand hygiene practice among nurses in Black Lion Specialized referral Hospital; Addis Ababa,Ethiopia,April2017 (n= 288).

Variables	Hand Hygiene Practice		AOR (95%CI)	PV
	Good >1.78/	Poor <1.78/		
Sex				
Female	156(54.1)	48(16.6)	0.662(0.283, 1.548)	0.341
Male	72(25)	12(4.1)	1	
Age				
<28	156(54.1)	40(13.8)	0.960(0.915, 1.006)	
0.089				
>28	72(25)	20(6.9)	1	
Hospital promoting the importance of hand hygiene				
yes	184(63.8)	48(16.6)	1.488(0.569, 3.892)	0.418
no	44(15.2)	12(4.1)	1	
Availability of soap and water				
Yes	172(59.7)	28(9.7)	0.324(0.155, 0.678)	0.003*
no	56(19.4)	32(11.1	1	
Availability of towel/tissue Paper				
Yes	48(16.6)	24(8.3)	3.314(1.587, 6.918)	0.001**
no	180(62.5)	36(12.5)	1	
Availability of Alcohol based hand rub in the ward				
yes	208(72.2)	40(13.8)	0.293(0.125, 0.686)	0.005*
no	20(6.9)	20(6.9)	1	
Knowledge				
Goodknowledge	121(42.01)	51(17.70)	2.873(1.258, 6.561)	0.012*
Poor knowledge	107(37.15)	9(3.12)	1	

*significant at $p<0.05$ **significant at $p\leq0.001$

6: Discussion

Hand hygiene is a core element and one of the most effective ways to prevent, control and reduce health care associated infection. Poor hand hygiene compliance of nurses with hand hygiene; however, is a major problem in hospital(1, 4). Although infection is most prevalent in patients up on admission, nurses also act as potential vectors for pathogenic agents. Hospitals provide a favorable transmission pathway for the spread of nosocomial infections, poor infection control practice of hand hygiene among nurses in one hand and overcrowding of patients in most clinical settings on the other (52). The number of scientific evidence that hand is the most important vehicle for transmission of nosocomial pathogens (21). This study tried to assess hand hygiene practiceand factors affecting compliance among nurses.

Good Hand Hygiene compliance of nurses as measured by this study was found to be 79%. This is a little bit greater than study conducted inGondar (48.4%) (54), Kenya and Ghana- which showed that the overall hand hygiene practice was (65%)(70%) (55,53). But this finding was lower than other studies done in Trivandrum countries(98%) (56);

Knowledge to hand hygiene guideline was found to be associated with hand hygiene compliance. Those who had good knowledge on hand hygiene has 2.8 times more compliance than poor knowledge which has similarity with other studies done in Kuwait which showed that knowledge of nurses weresignificantly associated with good hand hygiene practice(59).knowledge on hand hygiene practice will help to hand hygiene compliance with recommended way, Knowledge of nurses will help to identify risk and benefit practice onthe way of HCAIs transmission and how to prevented.

The presence of ABHR was positively associated with Hand hygiene practice in which those who had access for ABHR in their ward/department had 0.2 times more likely to compliance than those who had not access on ABHR. This is similar with other studies done in Taiwan, the availability of ABHR resulted significant improvement of hand hygiene practice (57). This might be related to the presence of ABHR during patient care that will remind the nurses to do hand hygiene, ABHR it is easy and simple to implementing.

The availability of towel/tissue paper in the working area was associated with hand hygiene practice. Those who had availability of towel/tissue paper in their ward are 3.3 times more likely compliance to hand hygiene than who had not available.which is similar with study done in Australia and Ghana, the availability of towel/tissue will improve hand hygiene practice (53,58).

7. Strength and Limitation of the study

Strength of the study

- The standard tool which developed by the World Health Organization guideline that was adopted and modified after reviewing relevant literatures to the subject.
- Most of hand hygiene indicator was assessed in this study

Limitation of the study

- This study involved small sale size (n= 288) and was not supported by observation
- There is also social desirability bias

8. Conclusion

- Nurses good hand hygiene compliance was indicated ‘after’ caring for a patient whereas poor hand hygiene compliance was reported ‘before’ having direct contact with a patient.
- Nurses hand hygiene practice was influenced by the knowledge they have for hand hygiene indications as per hand hygiene guideline.
- There was no statistical significant variations on hand hygiene practice score across nurses in different wards

9. Recommendations

The following actions are recommended to Black Lion specialized Referral Hospital, Infection prevention committees and Ministry of Health

- Efforts need to be focused to awareness of the impact of HCAI and implications of hand hygiene.
- Provision of working wards/department with hand hygiene facilities like, sink, ABHR Jul, glove,
  and towel for better hand hygiene practice.
- Give training and re- training programme on hand hygiene guidelines.
- Infection prevention and control in Health care settings should be corporate in to nurses Performance contra ting to help improve hand hygiene compliance rate.

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Annex -I: English version information sheet and consent form

This study will be conducted on the assessment of hand hygiene practice and factors affecting compliance among Nurses in Black Lion Specialized Referral Hospital, 2017.

1.Information sheet

Hello, I am _____ from Addis Ababa university research team. I would like to ask few questions about factors associated with 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 and it takes 20 minutes.

Title of the study: assessment of hand hygiene practice and factors affecting compliance among Nurses in Black Lion Specialized Hospital, Addis Ababa, Ethiopia 2017 g. c.

Objective of the study: To assess the hand hygiene practice among Nurses in Black Lion Specialized Hospital, Addis Ababa, Ethiopia, 2017 g. c.

Rights of the participant: participating and not participating is the full right and participants can stop from participation in the study at any time. And also the participant can skip question which does not want to respond. Participants can ask any questions which is not clear for understanding.

Confidentiality: - Any information forwarded will be kept private and his/her name will not be specified.

2. Informed consent

I have read all this form or it has been read to me in the language I comprehend and understood all conditions stated above. Therefore, would you willing to participate in this study

Yes. □ No.□

Signature of participant_____

Name of researcher----------

Signature ----------: Address: Tell (E-mail) 0912082960 /abaynegewo@gmail.com

Name of witness'_____

Signature_____

Date_____ starting time _____Ending time_____

Result of administration 1.Completed 2.Respondent not available 3. Refused 4.Partially completed.

If the respondent is not voluntary, please skip to the next participant.

Annex II: Questionnaire

Addis Ababa University College of Health Sciences Department of Nursing and Midwifery Questionnaire to Assess Hand Hygiene Practice

Part I. Socio-Demographic factors-please circle a number for your response

Characteristics	Possible response	skip
Sex	Female-------1 Male---------2	
Age	----------	
Religion	Orthodox-----1 Catholic----4 Muslim--------2 Other------5 Protestant-----3	
Department of working	Medicine--------1 Gyn/ obs ---------3 Surgery---------2 Pediatrics-------4 Other /specify/-	
Total time spent on working in hours per week		
Years of Experience	5----------(1) 5- 10 ----------(2) 11- 15 -------(3) >15 ----------(4)	
Hospital promoting the importance of hand hygiene	Yes-----1 No------0	
Availability of soap and water in working ward	Yes-----1 No------0	
Availability of sink in working ward	Yes-----1 No------0	
Availability of towel/tissue paper	Yes-----1 No------0	
Availability of Alcohol based hand rub in the ward	Yes-----1 No------0	
Availability of glove in the ward	Yes-----1 No------0	
Knew presence of infection prevention committees	Yes-----1 No------0	

Part II hand hygiene knowledge questionnaire-please circle a number for your response

Question	Possible response	skip
K1. Alcohol-based hand rubs should not be used when hands are visibly soiled	Yes-----1 No------0 Don‘t know----0	
K2. Alcohol-based hand rubs will still be effective if applied for less than 60 seconds	Yes-----1 No------0 Don‘t know----0	
K3. Hand hygiene is required following the removal of gloves after patient contact	Yes-----1 No------0 Don‘t know----0	
K4. Single-use cloth towels and paper towels are acceptable for drying hands in patient care areas.	Yes-----1 No------0 Don‘t know----0	
K5. Hand hygiene must be performed before patient contact, following emptying of a drainage reservoir, and prior to and following venipuncture.	Yes-----1 No------0 Don‘t know----0	
K6. When using an alcohol-based hand rub to decontaminate hands they should be rubbed together until dry.	Yes-----1 No------0 Don‘t know----0	
K7. Handling of paperwork is not one of the recommended situations for performing hand hygiene.	Yes-----1 No------0 Don‘t know----0	
K8. Hand hygiene is required following contact with the bed linen of a patient with MRSA.	Yes-----1 No------0 Don‘t know----0	
K9. Hand creams and lotions are recommended for health care workers‘ hands.	Yes-----1 No------0 Don‘t know----0	
K10. Gloves should not be reused when caring for different patients.	Yes-----1 No------0 Don‘t know----0	
K11. The average cost of a hospital-acquired infection in developed countries is approximately $10,000*.	Yes-----1 No------0 Don‘t know----0	
K12. Approximately 20% of intensive care patients develop hospital-acquired infections in developed countries.	Yes-----1 No------0 Don‘t know----0	

Part III. Please circle a number to indicate your response for hand hygiene practice

I cleanse my hands:	Never	Some of the time	Half of the time	Mostly	Always
P1.After going to the toilet	1	2	3	4	5
P2.Before caring for a wound	1	2	3	4	5
P3.After caring for a wound	1	2	3	4	5
P4.After touching potentially contaminated Objects	1	2	3	4	5
P5.After contact with blood/ body fluids	1	2	3	4	5
P6.After inserting an invasive device.	1	2	3	4	5
P7. Before entering an isolation room.	1	2	3	4	5
P8. After contact with a patient's skin.	1	2	3	4	5
P9.After exiting an isolation Room.	1	2	3	4	5
P10.Before endotracheal Suctioning.	1	2	3	4	5
p11.After contact with a patient's secretions	1	2	3	4	5
P12.Before patient contact	1	2	3	4	5
P13.After removing gloves	1	2	3	4	5
P14.If they look or feel dirty.	1	2	3	4	5

Annex III. Declaration

I, the undersigned, declare that this is my original work and has never been presented by another person in this or any other university and that all the source materials and references used for this thesis have been duly acknowledged.

Name: AbayneshNegewo(BSc)

Signature_____

Place: Addis Ababa, Ethiopia.

Date of submission: _____

The thesis has been submitted for examination with my approval as a university advisor.

Name of advisor: _____ Signature: Date

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