

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**COLLEGE OF HEALTH SCIENCES**

**FACULTY OF ALLIED HEALTH SCIENCE**

**DEPARTMENT OF NURSING**

**DIPLOMA PROGRAMMES**



**ATTITUDE AND PRACTICE OF STUDENTS OF HOLY FAMILY NURSING  
AND MIDWIFERY TRAINING COLLEGE, BEREKUM TOWARDS HAND  
HYGIENE**

**SUBMITTED BY:**

**OPOKU BOAHEN CINDY - 5866622**

**OPOKU YEBOAH ADELAIDE - 5874622**

**[HOLY FAMILY NURSING AND MIDWIFERY TRAINING COLLEGE,  
BEREKUM]**

**AFFILIATED TO KNUST, KUMASI**

**HOLY FAMILY NURSING AND MIDWIFERY TRAINING COLLEGE, BEREKUM**




**ATTITUDE AND PRACTICE OF STUDENTS OF HOLY FAMILY NURSING  
AND MIDWIFERY TRAINING COLLEGE, BEREKUM TOWARDS HAND  
HYGIENE**

<b>OPOKU BOAHEN CINDY</b>	<b>-</b>	<b>5866622</b>
<b>OPOKU YEBOAH ADELAIDE</b>	<b>-</b>	<b>5874622</b>

## DECLARATION

We hereby declare that this submission is our work towards the Diploma in General Nursing and that, to the best of our knowledge, it contains no material previously published by another person nor material which has been accepted for the award of the diploma of the University, except where due acknowledgement has been made in the text.

Opoku Boahen Cindy  
5866622

  
.....  
Signature

03/11/2023  
.....  
Date

Opoku Yeboah Adelaide  
5874622

  
.....  
Signature

03/11/2023  
.....  
Date

Certified by:  
Amos Owusu  
(Supervisor)

  
.....  
Signature

03/11/23  
.....  
Date

Monica Nkrumah  
(Principal)

.....  
Signature

.....  
Date

## **ABSTRACT**

The study focused on the attitude and practice of hand hygiene among Nursing and Midwifery students at Holy Family Nursing and Midwifery Training College, Berekum. A descriptive study design was used to collect in-depth information for the study. The sample population was obtained using a convenient sampling technique. A total of 40 students were sampled for the study. The data for the study was collected by administering the questionnaire to the participants.

The study found that all of the respondents had good knowledge of proper hand hygiene. The majority of the respondents (95%) believed that artificial fingernails could increase the likelihood of colonization of hands with harmful germs. The majority of the respondents (90%) agreed that hand hygiene should be performed in sequence. The majority of the respondents (60%) agreed that hand rubbing causes skin dryness more than handwashing. Most of the respondents (60%) agreed that insufficient time for hand hygiene hinders student nurses to perform appropriate hand hygiene according to the recommended guidelines. Eighty percent (80%) of the respondents agreed that hand hygiene is an essential part of their role. The majority of the respondents (77.5%) agreed that they advise others to abide by the rules of hand hygiene. The study recommended that artificial fingernails should not be worn by student nurses and natural ones should also be kept short because it could increase the likelihood of colonization of hands with harmful germs, hand hygiene posters and literature should be placed at vantage points to help students to perform hand hygiene in proper sequence, student nurses should be encouraged to use the easiest form of hand hygiene when they do not have enough time to perform them, students should also be encouraged to remind others to perform hand hygiene when they forget and there should be rewards for compliance and punishments for noncompliance to hand hygiene protocols.

## TABLE OF CONTENTS

DECLARATION .....	2
ABSTRACT.....	ii
TABLE OF CONTENTS.....	iii
LIST OF TABLES .....	vi
LIST OF FIGURES .....	vii
ABBREVIATION.....	viii
ACKNOWLEDGEMENT .....	ix
CHAPTER ONE .....	1
INTRODUCTION .....	1
1.0 Background of the study .....	1
1.1 Problem Statement .....	5
1.2 General Objective .....	6
1.3 Specific Objectives.....	7
CHAPTER TWO .....	8
LITERATURE REVIEW .....	8
2.0 Introduction.....	8
2.1 Overview.....	8
2.2 Knowledge of student nurses on hand hygiene.....	8
2.3 How often student nurses practice hand hygiene.....	11
2.4 Factors that hinder student nurses to perform effective hand hygiene .....	13

2.5 The attitude of student nurses towards effective hand hygiene .....	15
CHAPTER THREE.....	18
MATERIALS AND METHODS .....	18
3.0 Introduction.....	18
3.1 Study area.....	18
3.2 The study population.....	18
3.3 Study design.....	19
3.4 Sampling technique and size.....	19
3.5 Data collection methods and instruments .....	19
3.6 Data analysis techniques .....	19
3.7 Ethical consideration.....	20
3.8 Limitation of the study .....	20
CHAPTER FOUR.....	21
DATA ANALYSIS AND RESULTS .....	21
4.0 Data Presentation & Analysis .....	21
4.1 Demographic Profile of Respondents .....	21
4.2 Knowledge of student nurses on hand hygiene.....	23
4.3 Factors that hinder student nurses to perform appropriate hand hygiene according to the recommended guidelines .....	27
4.4 The practice of appropriate hand hygiene according to the recommended guidelines ..	29
4.5 Attitude of students towards hand hygiene .....	31
CHAPTER FIVE.....	33

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS .....	33
5.0 Introduction .....	33
5.1 Discussions.....	33
5.1.1 Knowledge of student nurses on hand hygiene.....	33
5.1.2 Factors that hinder student nurses to perform effective hand hygiene .....	34
5.1.3 How often student nurses practice hand hygiene .....	36
5.1.4 The attitude of student nurses towards effective hand hygiene .....	36
5.2 Conclusions .....	37
5.3 Recommendations .....	38
REFERENCES.....	39
APPENDIX.....	43

## LIST OF TABLES

Table 1: Age Distribution of Respondents .....	21
Table 2: Gender of Respondents .....	22
Table 3: Religion of Respondents .....	22
Table 4: Marital Status of Respondents .....	22
Table 5: Programs offered by Respondents .....	23
Table 6: Respondents on whether hand washing and hand rubbing are recommended to be performed in sequence and hand rubbing causes skin dryness more hand washing .....	26
Table 7: Factors that hinder student nurses to perform appropriate hand hygiene according to the recommended guidelines.....	27
Table 8: Respondents on the practice of appropriate hand hygiene according to the recommended guidelines .....	30
Table 9: The attitude of respondents toward hand hygiene .....	31

## LIST OF FIGURES

Figure 1: Respondents knowledge of hand hygiene .....	23
Figure 2: Respondents on the steps on alcohol hand rub and hand washing .....	24
Figure 3: The least time used by respondents perform alcohol hand rub .....	24
Figure 4: Respondents on what should be avoided because it is associated with an increased likelihood of colonization of hands with harmful germs .....	25
Figure 5: Respondents on number of times they perform hand hygiene .....	29

## **ABBREVIATION**

WHO	World Health Organization
CDC	Center for Disease Control
NMC	Navodaya Medical College
RGN	Registered General Nursing
RM	Registered Midwifery
PBM	Post Basic Midwifery
SPSS	Statistical Package for Social Sciences

## **ACKNOWLEDGEMENT**

We would like to extend our deepest gratitude and praise to the Almighty God for providing us with the strength and knowledge for this study.

We are much grateful to the Management of the Holy Family Nursing and Midwifery Training College, Berekum for allowing us to conduct the study in the College.

We also thank the Department of Nursing of the Kwame Nkrumah University of Science and Technology for providing us with the guideline for the study.

Our deepest appreciation also goes to our supervisor, Mr. Amos Owusu for his constructive criticisms, objective guidance, and direction for the study and the entire staff of the College for their support throughout the study.

We are grateful to all the respondents for their contributions and efforts. Without them, the study would not be possible. We also appreciate our parents for their financial, emotional, psychological, and spiritual support throughout our education.

Finally, our sincere appreciation goes to the authors and publishers of pieces of literature used in the study. Thank you all and God bless you.

## CHAPTER ONE

### INTRODUCTION

#### 1.0 Background of the study

Hand hygiene is a way of cleaning one's hands that substantially reduces potential pathogens (harmful microorganisms) on the hands. Hand hygiene is considered a primary measure for reducing the risk of transmitting infections among patients and health care personnel. Hand hygiene procedures include the use of alcohol-based hand rubs (containing 60% - 95% alcohol) and handwashing with soap and water (Centre for Disease Control [CDC], 2016).

Hand hygiene is recognized as the leading measure to prevent cross-transmission of microorganisms and to reduce the incidence of healthcare-associated infections. Despite the relative simplicity of this procedure, compliance with hand hygiene among health care providers is as low as 40% (Asaduddin & Nair, 2014). To address this problem, continuous efforts are being made to identify effective and sustainable strategies. One of such efforts is the introduction of an evidence-based concept of "My five moments for hand hygiene" by the World Health Organization (Asaduddin & Nair, 2014). These five moments that call for the use of hand hygiene include the moment before touching a patient, before performing aseptic and clean procedures, after being at risk of exposure to body fluids, after touching a patient, and after touching patient surroundings and this concept has been aptly used to improve understanding, training, monitoring, and reporting hand hygiene among student nurses (Asaduddin & Nair, 2014). In Asia, there is a paucity of studies exploring this subject, although the prevalence of healthcare-associated infections is high in this region; especially nursing students' knowledge of standard precautions. The observance of hygiene by students is reported as being weak.

Therefore, it is essential to investigate and know student nurses' knowledge, attitudes, and practices about hand hygiene so that appropriate strategies can be developed to promote hand hygiene compliance (Asaduddin & Nair, 2014). Hand hygiene, or handwashing, is the single most important factor in preventing hospital-acquired infections. Effective hand hygiene compliance can lower the prevalence of healthcare-associated infections. Nursing care accounts for approximately 80% of the direct care of patients, involving personal and intimate care activities. Nursing students are in contact with patients during clinical practicum and internship programs as part of their educational course requirements (Nasirudeen, 2017).

A hand hygiene survey was administered to nursing students in a tertiary institution in Singapore and the results of this survey strongly indicate that nursing students understand the importance of hand hygiene compliance and perceive clinical internship programs and practical laboratory sessions to be effective methods of hand hygiene education (Nasirudeen, 2017). The practice of hand hygiene is a simple yet effective way to prevent infections. Cleaning of the hands can prevent the spread of germs, in particular those that are resistant to antibiotics and are becoming difficult, if not impossible, to treat. On average, healthcare providers and indeed medical students clean their hands less than half of the time they should (Adewumi, 2016). Improper hand hygiene practices among student nurses are a common risk factor and interventions to improve hygiene have proven to be an effective strategy in reducing nosocomial infection. Hand hygiene has been described as the single most important, simplest, and least expensive means of preventing infections (Owoseni, 2020). Hand hygiene is the practice, which keeps the hands free from pathogens or decreases the amount before any procedure or touching the patient. Hand hygiene prevents cross-infection among students, but student nurses' adherence to hand hygiene is poor. Easy, timely access to both hand hygiene and skin protection is necessary for satisfactory hand hygiene behaviour (Pittet, 2019). Transmission of microorganisms from the hands of student nurses is the main source of cross-

infection in hospitals and can be prevented by hand washing. Compliance with handwashing is moderate. Variation across individuals suggests that a targeted educational programme may be useful (Pittet, 2019). Hand hygiene is a milestone of infectious disease control, and the promotion of improved hand hygiene has been recognized as an important public health measure. It has long been recognized to be a convenient, effective, and also cost-effective means of preventing communicable diseases (Mahumud, 2016). The transmission of communicable diseases is responsible for over 164 million lost school days per school year among students worldwide (Mahumud, 2016). Approximately 2.4 million infections can be prevented annually by good hand hygiene practice and mere handwash is a primary way of preventing the spread of infections. A hand wash would cut down on 50% of infections (Mahumud, 2016). A meta-analysis on 30 hand hygiene studies found that improvements in handwashing reduced the incidence of upper respiratory tract infections by 21% and gastrointestinal illnesses by 31%. Another evidence showed that handwashing with soap could reduce the risk of diarrheal diseases by 42% - 47%, and handwashing promotion could save millions of lives (Mahumud, 2016).

Handwashing has been recognized to be a convenient, effective, and also cost-effective means of preventing communicable diseases in developing countries. Handwashing is especially important for students, as they are together for many hours at school (Addo, 2018). Research shows that the palm serves as the richest habitat for human microbial accommodation, making hand hygiene essential in infection prevention and control. Several pathogens such as *Staphylococcus* spp, salmonella, *Escherichia coli*, have been isolated from human palms; some of which were resistant to a known antibiotic. According to the Global Handwashing Partnership (2019), forming hand hygiene habits means being able to undertake the procedures in hand hygiene automatically without involving the decision-making parts of our brain and this view conforms with the psychological understanding of habits formation and suggests that

hand hygiene must become a habit, intrinsically performed by individuals whenever needed without it being as a result of decision making.

Hand hygiene habit for this research is defined as the regular and routine tendency to practice hand hygiene and hand rub with alcohol-based hand sanitizers (ABHS) is also a recommended hand hygiene practice and considered the best option when hand washing is not possible; which is mostly the case when outdoors (Oppong, Yang, Amponsem-Boateng, & Duan, 2019). Fomites such as Automated Teller Machines (ATM), computer keyboards, mobile phones generally serve as the source of infection in communities and the main source of nosocomial infections and it is believed that most people do not wash their hands even when the activity, they engage in warrants so and some studies attribute this to dirty and unavailable hand hygiene apparatus like water and washing basin (Oppong, Yang, Amponsem-Boateng, & Duan, 2019). The hand has also been identified to play a crucial role in the fecal-oral transfer of microbes among individuals in Ghana (Oppong, Yang, Amponsem-Boateng, & Duan, 2019). Hand hygiene practices in colleges have mostly been the focus of hand hygiene compliance campaigns since it is one of the major ways of dealing with infections. Little attention, however, has been given to habitual hand hygiene compliance in colleges especially in Ghana (Oppong, Yang, Amponsem-Boateng, & Duan, 2019). Hand hygiene is a comprehensive term that includes hand washing which involves removing soil and transient microorganisms from the hands using soap and water and hand antisepsis which entails the removal or elimination of microorganisms from the hands with an antiseptic agent, in the form of an alcohol-based hand rub or an antiseptic soap (Oyapero & Oyejoke, 2018). Hand hygiene also includes the care of the fingernails and adherence to hand hygiene recommendations is the single most important practice for preventing the transmission

of microorganisms in health care, which directly contributes to student's safety and several studies have shown a positive effect of improved hand hygiene on infection rates among student nurses (Oyapero & Oyejoke, 2018).

### **1.1 Problem Statement**

Hand hygiene is identified as a critical component for promoting patient safety and for the prevention of pathogenic infections (Salama et al., 2016). As part of the healthcare team, student nurses are pivotal in the transmission of pathogens and prevention of infectious diseases as they undertake a high proportion of the treatment and care of patients during their clinical placement (Labragueet et al., 2017). According to Foote and El-Masri (2016), the vital role of nurse educators in modelling and reinforcing hand hygiene practices is also highlighted in some studies. However, overall evidence reflected poor or inadequate compliance to hand hygiene among student nurses (Carradine, 2014). The spread of infectious diseases can occur faster in school settings because of high numbers of students, and the College community is not exempted as recent reports show that school health can be protected during an epidemic if appropriate handwashing practices are carried out (Paul & Loveline, 2019). There is evidence that student nurses can overestimate their knowledge and compliance to hand hygiene practices and this poor self-assessment can translate into unsatisfactory compliance later in professional practice, among student nurses (Paul & Loveline, 2019). Thus, the school setting becomes important and can provide a good avenue for community efforts to promote good hand hygiene practices including hand washing (Paul & Loveline, 2019). In two recent studies published, Irish and Norwegian nursing students had positive attitudes towards hand hygiene practices however, their hand hygiene practices were suboptimal especially after contact with patients and patient surroundings and before clean/aseptic procedures (Kingston et al., 2017; Sundal et al., 2017). The global prevalence of washing hands with soap is 19%, and that of the African region is even lower at 14%. Also, data on some African countries indicate a prevalence of

13%, 15%, and 8% for Ghana, Kenya, and Burkina Faso, respectively. In addition, available data on Cameroon indicates that good hand hygiene practices were reported in less than half of student nurses. Some factors that could explain the inappropriate hand hygiene practices, especially among student nurses in low-income settings, are poor scientific knowledge, absence of clean running water, and lack of awareness and practice in hand hygiene. Also, the efforts to improve hand hygiene can be compromised by cultural and religious beliefs in sub-Saharan African countries (Paul & Loveline, 2019). Common barriers to hand hygiene compliance included time constraints, high patient volumes, lack of soap and paper towels, forgetfulness, lack of time, presence of skin problems, knowledge deficit, and lack or absence of positive role models (Kingston et al., 2017).

Hand hygiene compliance among student nurses, in general, is unacceptably low especially in developing countries like Ethiopia (range, 5% - 89%; average, 38.7%). A study conducted at Jimma University in Southwest Ethiopia also showed that handwashing practice by the nursing students was inadequate. This study demonstrated that only 43.2% of the nursing staff practice adequate hand hygiene while 56.8% of them practice inadequate hand hygiene. In an observational study conducted among student nurses in Tertiary institutions in Ghana, a handwashing compliance rate ranging from 9.2% to 57% among doctors and 9.6% to 54% among nurses was reported (Jemal, 2018).

Therefore, this research is being conducted to determine the attitude and practices of student nurses at Holy Family Nursing and Midwifery Training College, Berekum on hand hygiene to determine if their hand hygiene habit puts them at risk of infections.

## **1.2 General Objective**

To determine the attitude and practices of student nurses at Holy Family Nursing and Midwifery Training College, Berekum towards hand hygiene.

### **1.3 Specific Objectives**

1. To assess the knowledge of student nurses at Holy Family Nursing and Midwifery Training College, Berekum on hand hygiene.
2. To identify the attitude of student nurses at Holy Family Nursing and Midwifery Training College, Berekum towards hand hygiene.
3. To know how often student nurses at Holy Family Nursing and Midwifery Training College, Berekum practice hand hygiene.
4. To investigate the factors that hinder student nurses at Holy Family Nursing and Midwifery Training College, Berekum to perform effective hand hygiene.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter contains a review of relevant literature related to the research topic. The sources of information include books, journals, online articles, and research reports.

#### **2.1 Overview**

Hand hygiene is widely recognized as the most important measure a healthcare worker can take in preventing the spread of healthcare-associated infections and as a member of the healthcare team, nursing students have direct patient contact during clinical practice; hence, good hand hygiene practice among nursing students is essential (CDC, 2021).

Low to moderate levels of hand hygiene knowledge and poor attitudes and practices are reported among nursing students (Raghunath & Hanumantappa, 2014). However, less is known about their attitudes and practices of hand hygiene, even though hand hygiene is the recommended optimum practice in most situations (Wiley, 2017). Educators and practitioners play an important role in ensuring that nursing students develop appropriate attitudes towards hand hygiene and engage in optimal hand hygiene practices (Kingston, 2017). Raising awareness among nursing students of their responsibility in preventing the occurrence and reducing the transmission of infections as an ongoing endeavor is required, with the laudable aim of preventing complacency and ultimately improving patient outcomes (Kingston, 2017).

#### **2.2 Knowledge of student nurses on hand hygiene**

Hand hygiene has been identified as the single most important factor in preventing infections.

Mahmood (2015) conducted a cross-sectional study to assess the knowledge of hand hygiene among the nursing students of Bareilly and to suggest suitable corrective and preventive measures to be taken in the future. These six months cross-sectional study was carried out among the nursing students of Rohilkhand Medical College and Hospital, Bareilly, Uttar Pradesh, India. A total of 50 students participated in the study. The majority of the students were females (72.0%), were aged between 21 - 25 years (60.0%), and had received formal training in hand hygiene in the last 2 years (90.0%). A higher proportion of them routinely used alcohol-based hand rubs (52.0%). Nearly 28% had poor knowledge and 72% had moderate knowledge regarding hand hygiene. The study concluded that knowledge about good hand washing practices and compliance of the same according to WHO guidelines amongst healthcare workers are essential for lowering healthcare-associated infections. The study shows the importance of improving the current training programs targeting hand hygiene practices among nursing students.

Hand hygiene competence is one of the critical outcomes in nursing education. Ensuring nursing students recognize the what, when, and how of hand hygiene is critical in light of the increasing rates of healthcare-associated infections (Wiley, 2017).

Thakker and Jadhav (2015) conducted a cross-sectional survey among 84 medical, 74 dental, and 40 nursing undergraduate students in a Tertiary Care Teaching Institute in Navi Mumbai, Maharashtra, India. Knowledge was assessed using the World Health Organization hand hygiene questionnaire. The scores for each student were calculated and compared. The scores were further graded as low, moderate, and good. Overall, only 7.5% of the participants had good knowledge regarding hand hygiene while the majority (69.1%) had moderate knowledge. Medical students' hand hygiene knowledge was significantly ( $P < 0.01$ ) higher than that of dental and nursing students. The overall low scores on hand hygiene knowledge indicate that undergraduate healthcare students require increased emphasis on hand hygiene

education, behavior, and improvement in their current primary training as well as undergraduate curricula.

Raghunath and Hanumantappa (2014) conducted a cross-sectional study in Navodaya Medical College (NMC), one of the biggest tertiary institutions in Raichur, India. This district is one of the 30 most backward places in India. NMC provides tertiary medical care for residents of Raichur and patients referred from neighbouring states. Ethical clearance was obtained from the Ethical Review Committee of Navodaya Medical College. The content and nature of the study were explained to the medical and nursing students of the College. Verbal consent was obtained from 98 medical and 46 nursing students who volunteered to participate. A self-administered questionnaire containing a set of questions regarding hand-hygiene knowledge was distributed to all participants. Knowledge was assessed using WHO's hand hygiene questionnaire for health care workers. A score of more than 75% was considered good, 50 - 74% moderate, and less than 50% was taken as poor. Data were analysed using the SPSS software. Descriptive statistics were used to calculate percentages for each of the responses given. Z-test was used to compare the percentage of correct responses between medical and nursing students. A *P* value less than 0.05 was considered significant. In this, a majority (79%, 114 out of 144) had claimed to have received formal training in handwashing. A significant difference ( $P < 0.001$ ) was observed between medical (73 out of 98, (74.2%)) and nursing (44 out of 46, (95.4%)) students who had received formal training in hand hygiene. When asked about the correct technique of hand washing, 89 out of 98 medical students (91.3%) and 45 of 46 nursing students (97.8%) said they knew the correct technique of handwashing.

Mehta and Tripathi (2019) conducted a cross-sectional study involving self-administered prestructured anonymous questionnaires administered to 50 staff nurses and 80 nursing students posted at a tertiary health care center of Central India. Z-test of proportions was used to compare the percentages for each of the appropriate responses between the two

study groups. The objective of this study was conducted to assess levels of knowledge in various aspects of hand hygiene in nurses and nursing students in the study area for identifying gaps for planning necessary corrective measures. Most of the study participants exhibited moderate levels of knowledge and practice with the marginal difference between the two study groups while nursing students were found to exhibit a remarkably higher level of attitude than staff nurses, the difference being statistically significant. This study stressed the growing need for prompt interventions at the institutional level for addressing the gaps evident from the study.

### **2.3 How often student nurses practice hand hygiene**

Hand hygiene is a simple and effective practice that reduces the transmission of hospital acquired infections. However, adherence to hand hygiene guidelines among health care professionals is low (Paudel, Ghosh, & Adhikari, 2017).

Paudel, Ghosh, and Adhikari (2017) conducted a descriptive study to assess hand hygiene practices among nurses working in hospitals in the Kingdom of Saudi Arabia. The standardized version of the World Health Organization (WHO) questionnaire was administered to nurses from six hospitals in the region of Asir and 300 nurses were approached to enroll 243 participants so the response rate was 81%. The study found that 65.4% (159) of the participants followed a good hand hygiene practice while 10.3% (25) showed inadequate hand hygiene practice. Good hand hygiene practice was found to be significantly higher among female participants (88%) than the male participants (44%). The participants from the department of internal medicine (43.5%) showed the highest percentage of inadequate hand hygiene practice while participants from the department of pediatrics reported a 100% good hand hygiene practice. The study concluded that male nurses and nurses require in-service educational intervention regarding hand hygiene to increase their compliance with its practice. Posters and other visual aids highlighting the significance of hand hygiene need to be displayed in all the

departments to sensitize the importance of hand hygiene among nurses. Improper hand hygiene practices among student nurses are a common risk factor for and interventions to improve hygiene have proven to be an effective strategy in reducing infections. Hand hygiene has been described as the single most important, simplest, and least expensive means of preventing infections.

Jayan et. al (2019) conducted a cross-sectional study among 368 student doctors and student nurses to determine the practice of hand hygiene among students in a tertiary facility using a multistage sampling technique. Data were collected with a set of self-administered, modified WHO questionnaires and analyzed using IBM and SPSS version 25. The mean age of respondents was  $35.2 \pm 9.3$  years, and the majority of them were between 36 - 45 years (33.6%). The male to female ratio was 1.6: 1. Most of the respondents were student nurses (41.5%) and 370 (98.95%) of the respondents had practiced good hand hygiene. Washing of hands before and after contact with other patients was 44.65% and 56.2% respectively. Most of them had received training on handwashing in the last three years and 62.7% of the respondents routinely used alcohol-based hand rub. The main reason cited for not observing hand hygiene practices consistently were lack of running water (53.4%), unavailability of alcohol-based hand rub (26.6%), and dirty water sinks (24.0%). Although the practice of hand hygiene was good among respondents in this study, lack of running water and unavailability of alcohol-based hand rub remain major constraints. School management should therefore provide adequate water supply and materials for sanitation and hand hygiene in tertiary institutions.

Paudel, Ghosh, and Adhikari (2017) conducted a descriptive cross-sectional study among nursing students to assess the level of practice (KAP) regarding hand hygiene among nursing students in the Western Region of Nepal. A self-administered questionnaire containing a different set of questions regarding practice on hand hygiene was used for data collection. A

total of 99% of the participants reported that they were acquainted with the WHO-recommended steps of handwashing. A total of 29% of the respondents believed that they had not been properly instructed in hand hygiene during their practice, 56% of the participants exhibited good practice regarding hand hygiene and 91% realized that the presence of an infection prevention team would have positive influences on their hand hygiene practices. The majority of the nursing students reflected upon their positive practice regarding hand hygiene among them. Essentially, most of the nursing students considered hand hygiene as an essential part of their role.

Improvement of accessibility to hand hygiene facilities would play an important role to improve compliance to hand hygiene in current practice.

#### **2.4 Factors that hinder student nurses to perform effective hand hygiene**

Hand hygiene compliance by healthcare providers has been difficult to achieve due to diverse environments, work culture, processes, and task requirements. Because of this complexity, hand hygiene lends itself well to a human factors analysis to design a system that matches human cognitive and physical strengths and makes allowances for human limitations (Anjum, Carleene, Raquel, & Cafazzo, 2010).

Rabecca (2017), conducted a study to describe factors associated with non-compliance to hand hygiene standards among student nurses in a public university in Windhoek, Namibia. A quantitative, descriptive, cross-sectional research design was employed using a stratified sample comprising three categories of student nurses. Data collection was done using a structured questionnaire. The results showed that institutionally there were no rewards or encouragements for hand hygiene, no sanctions for non-compliers, and no workshops, seminars, and educational courses on hand hygiene. The key recommendations for this study included dedication for hygiene standards to encourage students to maintain hygiene practice

and to ensure that there are adequate resources for the implementation of hand hygiene policy as well as rewards or incentives for compliers and sanctions for non-compliers.

Rynga, Kumar, Gaiind, and Rai (2015) conducted a cross-sectional study on knowledge, attitude, and practice on hand hygiene compliance among student nurses at Vardhman Mahavir Medical College and Safdarjung College. Among respondent student nurses, the most common reported reason for not practicing hand hygiene was the non-accessibility of sinks or alcohol-based hand rub at point of care; amongst nurses, it was the belief that their hands are not dirty or hand hygiene is not so important for every patient. On being asked why they practice hand hygiene, only 8% reported being motivated by their colleagues. A total of 342 hand hygiene opportunities were observed and overall hand hygiene compliance was found to be 14.6%. The necessary infrastructure of the College was surveyed for optimal hand hygiene practices. It was observed that at many places sinks were not easily accessible and there was no facility to dry hands after hand hygiene. Alcohol-based hand rubs were present but not easily accessible. Posters illustrating hand hygiene techniques were present only in a few places. This study clearly shows that there is a need for the development of strategies to improve hand hygiene compliance among student nurses in colleges.

Anjum, Carleene, Raquel, and Cafazzo (2010), conducted a descriptive study using the multiphased user-centered approach to explore barriers to hand hygiene in diverse environments for several student nurses. Observational studies, interviews, focus group discussions, and surveys were used to engage end-users in solution development. Solutions were then validated through an environmental modification study, which sought to quantify the benefits of proposed solutions. This research highlighted the need to take into consideration the differences between students, their environments, and the tools with which they are provided when recommending solutions to mitigate barriers.

## **2.5 The attitude of student nurses towards effective hand hygiene**

Hands are the principal route of infections or health-associated infections. Hand hygiene is effective in reducing infection rates. Hand hygiene among student nurses plays a pivotal role in preventing the transmission of infections. The study aimed to assess the attitude regarding hand hygiene among students of healthcare professions (Jayan, et al., 2019).

Jayan et. al (2019) conducted a descriptive study using a quantitative research approach. The study was conducted at Yenepoya University, Karnataka. A purposive sampling technique was used to select the subjects. The sample comprised of 100 health professional students, 25 each from medical (MBBS), dental (BDS), physiotherapy (BPT), and nursing (BSc Nursing) courses, and data were collected from August to September 2018. The inclusion criteria for selecting the subjects were health care, professional students, studying in their 4th year of MBBS/BDS/BPT/B.Sc. Nursing courses. Students who were not willing to be study subjects were excluded. Ethical principles were followed during data collection as in the guidelines of the Institutional Ethics Committee. The tool used for data collection was a structured attitude scale (reliability 0.7). The demographic characteristics of study subjects where a majority (55%) of the subjects were 22 years old, a majority (90%) were females, a majority (98%) had previous information regarding hand hygiene. All healthcare professional students had a favorable attitude towards hand hygiene. The mean attitude score was  $79.15 \pm 8.78$ . The majority agreed that disinfecting hands is not necessary before wearing gloves (37%), sometimes they have more important things to do than handwashing (29%) and they feel frustrated when others omit hand hygiene (43%). The majority of the respondents (38%) had a neutral attitude for the item such as there is no need to follow hand hygiene in an emergency, 25% of them had a neutral attitude for the statement washing hands can cause the skin to become dry, cracked wrinkled and 40% had a neutral attitude for the statement that hand hygiene products can damage my skin. The study revealed that all the study participants had a

favourable attitude towards hand hygiene. It is presumed that this may influence their practice of hand hygiene as well and the College community where a lot of students from various streams are involved in learning health care plays a very important role in increasing hand hygiene compliance among the students and reducing cross-transmission of infections among patients.

Arbabisarjou (2016) conducted a cross-sectional study on 200 out of the 240 student nurses from Colleges in Kerman city in East of Iran in 2015. The standardized questionnaire was used for data collection. The data were analyzed using SPSS version 22. The frequency and percentage of frequency in descriptive statistics were employed for data analysis and the confidence interval was considered as 95%. The results showed that the majority of participants were males (173, 86.5%), had BA degrees (161, 80.5%), and were married (155, 70.5%). Most of the student nurses (77, 38.5%) had clinical experience. The majority of the nurses had a positive attitude (141, 70.5%) and good performance (175, 87.5%).

Khan, Akhtar, Jamila, Bano, and Rafique (2021) conducted a study to explore the attitude of hand hygiene. In this study, participants had a good attitude towards hand hygiene components. The responsiveness of respondents about handwashing through the use of running water and antiseptic was 68% and respondents' use of only running tap water was 10% and 22% of respondents use soap water in a basin. Participants agreed that hand hygiene can be improved by administrative order and continuous health education (97.8%), motivation to wash their hands because of fear of contracting a disease (96.7%), hand hygiene is often not adhered to because of busy lecture schedule on campus (75.27%), hand hygiene should be done when in contact with people and fomites (97.8%) and hand washing can be protective for student nurses (99.4%). The students in the College had a good attitude towards hand hygiene and it reduces the risk of infection. Students had a good understanding of the components of hand hygiene. They also had enough knowledge about how to prevent infections through hand

hygiene and a majority of students practiced hand hygiene after touching people and surroundings or fomites. Proper hand hygiene is one of the foremost techniques to reduce infections.

## **CHAPTER THREE**

### **MATERIALS AND METHODS**

#### **3.0 Introduction**

This chapter talks about the study area and population, the study design, sampling techniques, data collection method and instrument, data analysis techniques, ethical considerations, and limitations encountered during the study.

#### **3.1 Study area**

The research was conducted in the Holy Family Nursing and Midwifery Training College, Berekum in the Bono Region of Ghana. The College is located at Biadan; a suburb of Berekum. The school shares boundary with the Holy Family Hospital, Berekum, and Freeman Methodist School. The College has a student population of 675 students comprising 100 males and 575 females. There are 28 teaching staff and 55 non-teaching staff. The College runs three Diploma programs; Registered General Nursing (RGN), Registered Midwifery (RM), and a two-year Post Basic Midwifery (NAP/NAC). The College authorities have made provision for several veronica buckets at various vantage points on campus to aid in handwashing and also provided two hand sanitizers to all students to help in performing hand rubbing since the outbreak of the COVID-19 pandemic.

#### **3.2 The study population**

The target population of the study is all students of Holy Family Nursing and Midwifery Training College, Berekum and the accessible population is first-year students of the College.

### **3.3 Study design**

A descriptive design was used for the study. The design was used because there was the need to describe the characteristics of the phenomenon being studied. The design also allows for participants or subjects to be observed in their natural and unchanged environment. The data collection in descriptive research allows for gathering in-depth information about the problem at hand.

### **3.4 Sampling technique and size**

A convenience sampling technique was used to select samples for the study. The accessible population for the study is all first-year nursing and midwifery students with a population size of 289. The sample size for the study was 40 students. The first-year students that were readily available and willing to participate were chosen for the study. This method was chosen because it is an extremely speedy, easy, readily available, and cost-effective sampling method.

### **3.5 Data collection methods and instruments**

Data collection was done through the use of structured questionnaires consisting of both closed ended and open-ended questions. It was chosen as the method of data collection because it is relatively cheaper, avoided embarrassment on the part of the respondents, and ensured the anonymity of respondents. Questionnaires were distributed to the students in their classes. Each student used approximately 30 minutes to complete the questionnaire.

### **3.6 Data analysis techniques**

The data obtained from the study were checked for accuracy, utility, and completeness. The data were coded and analysed using Microsoft Excel. Microsoft Excel was used for data analysis because it is user-friendly. The results are presented in tables or figures.

### **3.7 Ethical consideration**

An introductory letter was obtained from the College and the consent of the Management of the College was sought. The respondents were well informed about the purpose, risks, and benefits of the study. The right of each respondent was respected and their personnel integrity safeguarded. The respondents were allowed to participate and withdraw from the study voluntarily. The study was also carried out with no physical, emotional, or economic harm to the respondents. Anonymity was ensured and none of the respondent's answers were discussed with other people to ensure confidentiality.

### **3.8 Limitation of the study**

The study was limited by financial constraints since no sponsorship was obtained for the study. The small sample size of the study made it impossible for us to generalize our study findings.

## CHAPTER FOUR

### DATA ANALYSIS AND RESULTS

#### 4.0 Data Presentation & Analysis

This chapter deals with the analysis of data collected from the field of study and the results obtained from the analysis. The data collected were analysed using Microsoft Excel. Descriptive statistical measures, such as tables with averages and percentages, along with figures are used to show the occurrence of different observations as investigated in the study.

#### 4.1 Demographic Profile of Respondents

**Table 1: Age Distribution of Respondents**

Variable	Categories	Frequency (n)	Percentage (%)
Age	18 – 23years	31	77.5
	24 – 29 years	8	20.0
	30 – 35 years	1	2.5
	Above 35 years	0	0.0

The majority of the respondents (77.5%) were aged between 18 - 23 years, 20% of the respondents, were between the ages of 24 - 29 years with just 2.5% of them within 30 - 35 years. None of the respondents were above 35 years.

**Table 2: Gender of Respondents**

<b>Variable</b>	<b>Categories</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
Gender	Males	16	40
	Females	24	60

The majority of the respondents (60%) were females and 40% were males.

**Table 3: Religion of Respondents**

<b>Variable</b>	<b>Categories</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
Religion	Christianity	40	100
	Islamic	0	0
	Traditionalist	0	0
	Other	0	0

All of the respondents were Christians. None of the respondents were either Muslims, Traditionalists, or practiced any other religion.

**Table 4: Marital Status of Respondents**

<b>Variable</b>	<b>Categories</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
Marital Status	Married	0	0
	Single	40	100
	Divorced	0	0

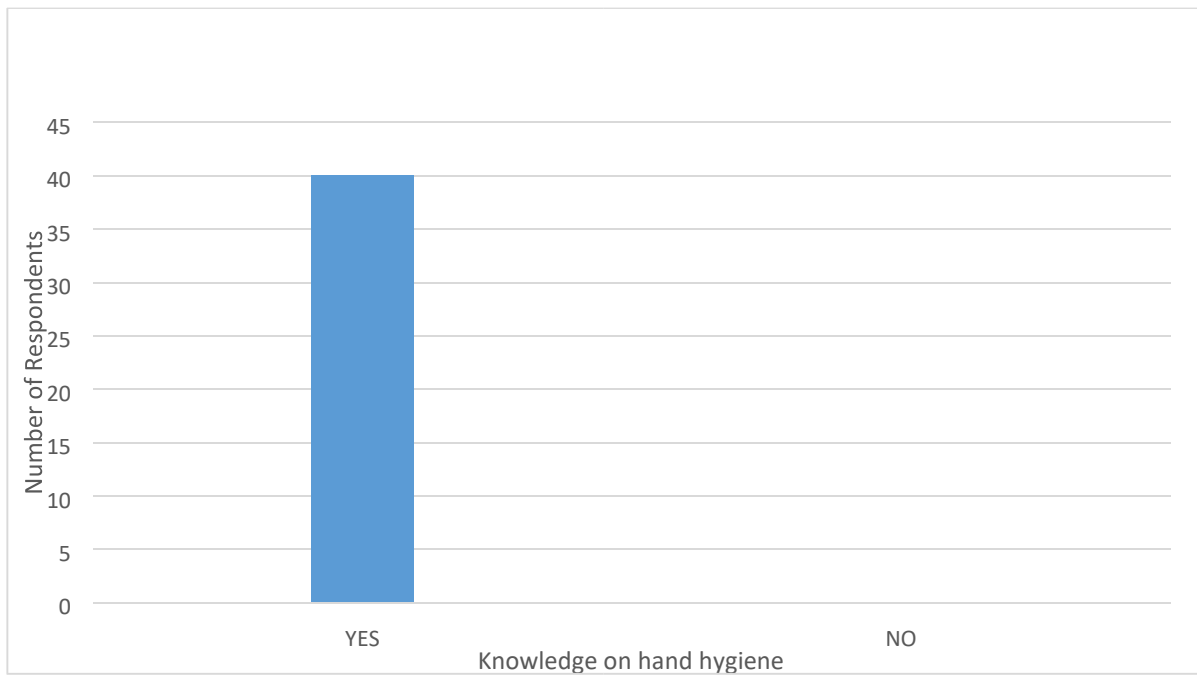
All of the respondents were single. None of them were either married or divorced.

**Table 5: Programs offered by Respondents**

Variable	Categories	Frequency (n)	Percentage (%)
Program	Registered General Nursing	34	85
	Registered Midwifery	6	15
	Post Basic Midwifery	0	0

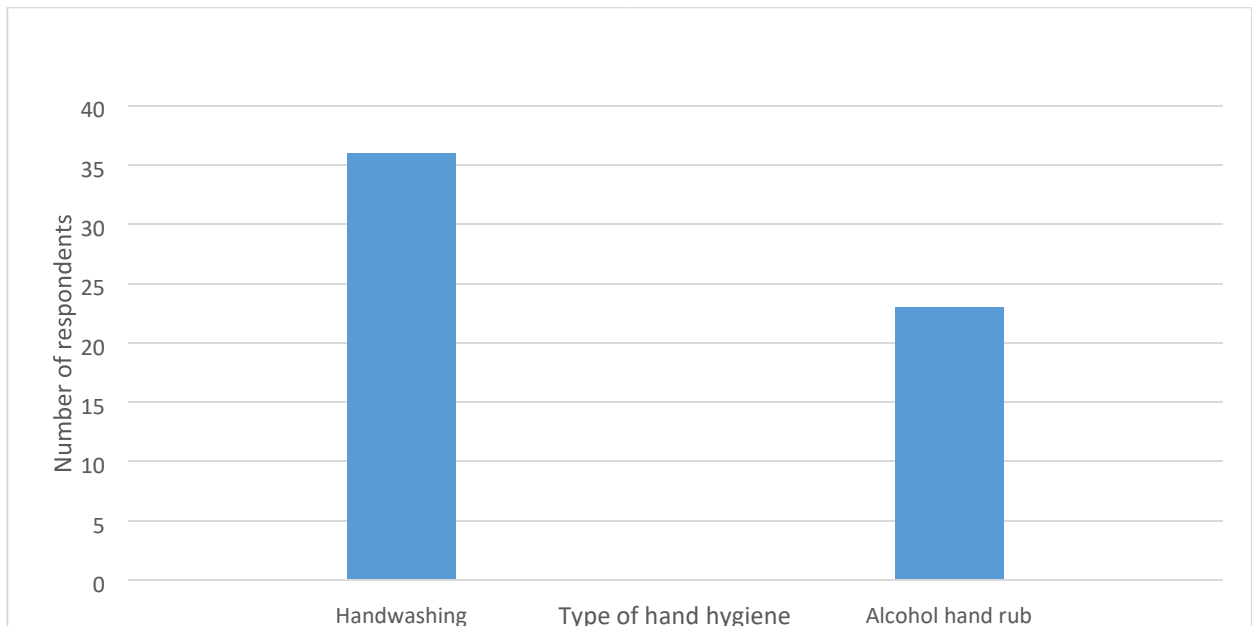
The majority of the respondents (85%) were Registered General Nursing students, a few of the respondents (15%) were Registered Midwifery students and none of the respondents were Post Basic Midwifery students.

#### 4.2 Knowledge of student nurses on hand hygiene



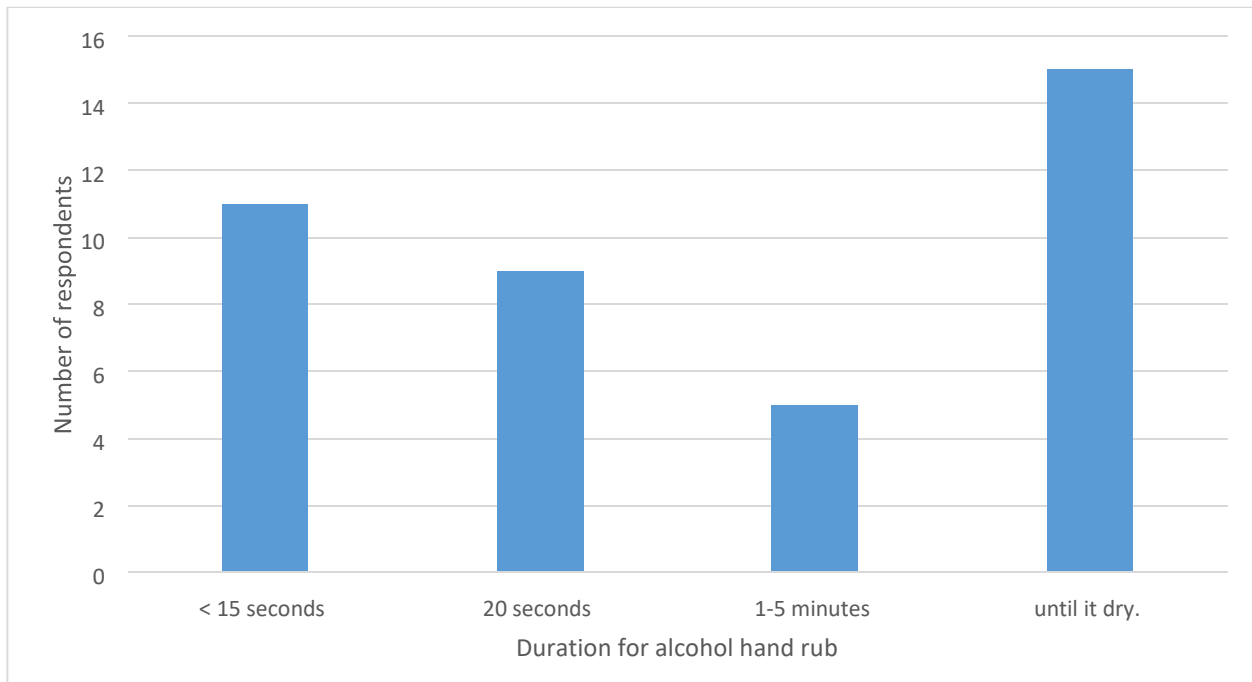
**Figure 1: Respondents knowledge of hand hygiene**

All the respondents knew the steps for hand hygiene.



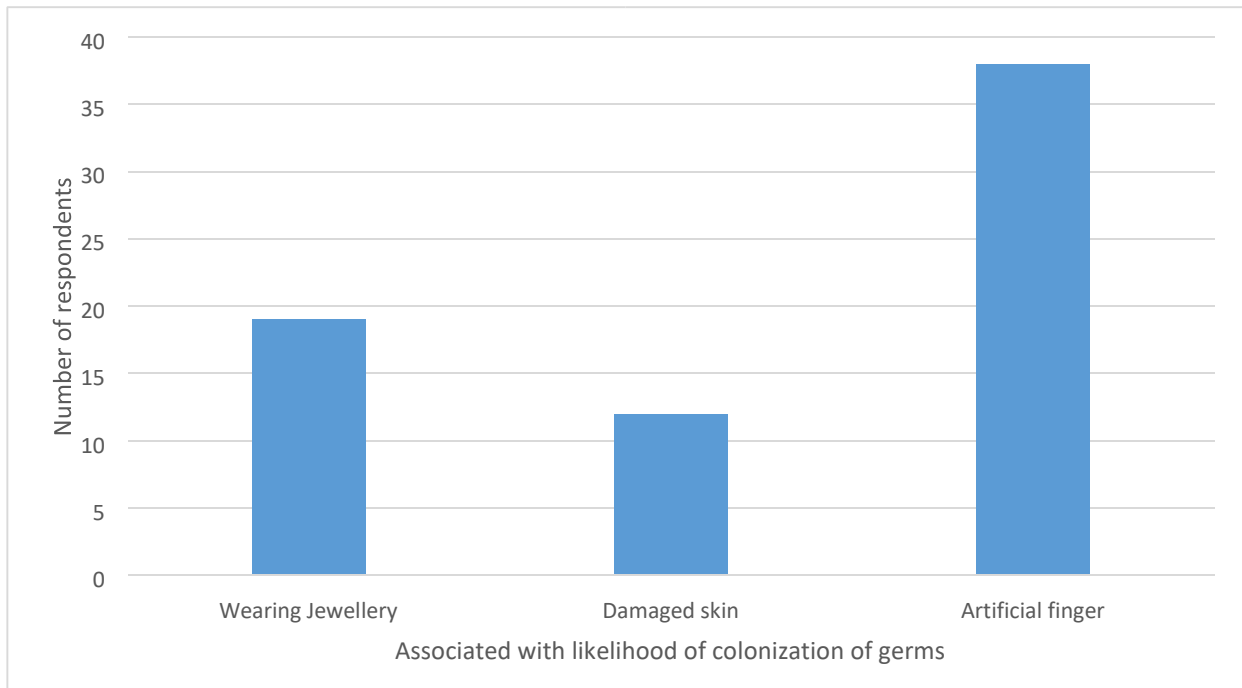
**Figure 2: Respondents on the steps on alcohol hand rub and hand washing**

Most of the respondents (90%) knew about handwashing and 60% of the respondents knew about alcohol hand rub.



**Figure 3: The least time used by respondents perform alcohol hand rub**

From figure 3, 27.5% of the respondents indicated that they use less than 15 seconds to perform hand hygiene, 22.5% of the respondents indicated that they use 20 seconds to perform alcohol hand rub while 12.5% of the respondents indicated that they use between 1 - 5 minutes to perform alcohol hand rub and 37.5% of the respondents indicated that they perform alcohol hand rub until their hands are dry.



**Figure 4: Respondents on what should be avoided because it is associated with an increased likelihood of colonization of hands with harmful germs**

Thirty percent (30%) of the respondents indicated that damaged skin could increase the likelihood of colonization of hands with harmful germs while 47.5% of the respondents indicated that wearing of jewellery could increase the likelihood of colonization of hands with harmful germs and most of the respondents (95%) indicated that artificial fingernails could increase the likelihood of colonization of hands with harmful germs.

**Table 6: Respondents on whether hand washing and hand rubbing are recommended to be performed in sequence and hand rubbing causes skin dryness more hand washing**

Statement		Agree	Disagree	Not sure
Hand washing and hand rubbing are recommended to be performed in sequence	n	36	2	2
	%	90	5	5
Hand rubbing causes skin dryness more hand washing	n	24	14	2
	%	60	35	5

Five percent (5%) of the respondents do not know whether hand hygiene should be performed in sequence while another 5% of the respondents disagreed that hand hygiene should be performed in sequence. The majority of the respondents (90%) agreed that hand hygiene should be performed in sequence. Also, five percent (5%) of the respondents do not know if hand rubbing causes skin dryness more than hand washing while 35% of the respondents disagreed that hand rubbing causes skin dryness more than hand washing and the majority of the respondents (60%) agreed that hand rubbing causes skin dryness more than hand washing.

### 4.3 Factors that hinder student nurses to perform appropriate hand hygiene according to the recommended guidelines

**Table 7: Factors that hinder student nurses to perform appropriate hand hygiene according to the recommended guidelines**

Statement		Agree	Disagree	Do not know
Inadequate liquid soap for hand hygiene.	n	25	12	3
	%	62.5	30	7.5
Inadequate paper towel/tissue.	n	25	15	0
	%	62.5	37.5	0
Statement		Agree	Disagree	Do not know
Inadequate water	n	20	19	1
	%	50	47.5	2.5
Dirty and faulty veronica buckets	n	15	25	0
	%	37.5	62.5	0
Insufficient time for hand hygiene	n	24	15	1
	%	60	37.5	2.5
I do not perform hand hygiene because other colleagues do not practice them	n	7	31	2
	%	17.5	77.5	5

More than half of the respondents (62.5%) agreed that inadequate liquid soap for hand hygiene hinders student nurses from performing appropriate hand hygiene according to the recommended guidelines whiles 30% disagreed with the above and 7.5% did not know.

Most of the respondents (62.5%) agreed that inadequate paper tissue/towel hinders student nurses from performing appropriate hand hygiene according to the recommended guidelines and 37.5% of the respondents disagreed that inadequate paper tissue/towel hinders student nurses from performing appropriate hand hygiene according to the recommended guidelines.

Half of the respondents (50%) agreed that inadequate water hinders student nurses from performing appropriate hand hygiene according to the recommended guidelines and 47.5% disagreed that inadequate water hinders student nurses from performing hand hygiene while 2.5% did not know that inadequate water hinders student nurses from performing appropriate hand hygiene according to the recommended guidelines.

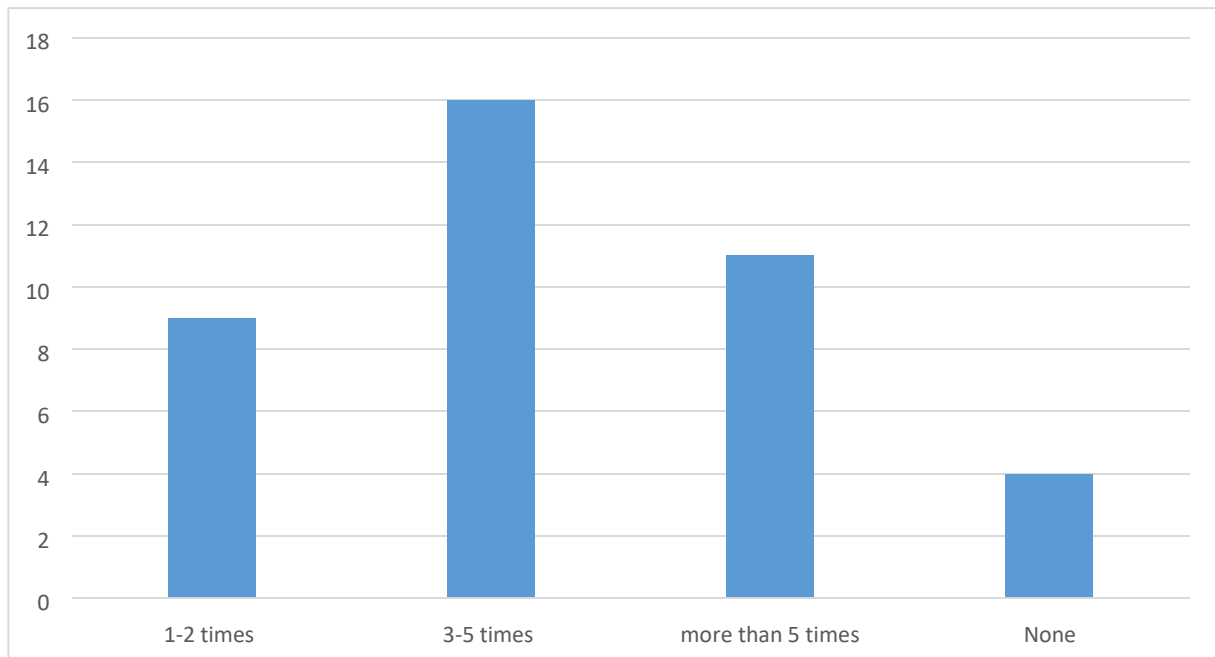
More than half of the respondents (62.5%) disagreed that dirty and faulty veronica buckets hinder student nurses from performing appropriate hand hygiene according to the recommended guidelines while 15% of the respondents agreed with the above statement.

Most of the respondents (60%) agreed that insufficient time for hand hygiene hinders student nurses from performing appropriate hand hygiene according to the recommended guidelines while 37.5% of the respondents disagreed with this statement and 2.5% did not know that insufficient time for hand hygiene hinders student nurses from performing appropriate hand hygiene according to the recommended guidelines.

Few of the respondents (17.5%) agreed that they do not practice hand hygiene because other colleagues do not practice hand hygiene. Most of the respondents (77.5%) disagreed that they do not practice hand hygiene because other colleagues do not practice hand hygiene, and 5% did not know that they do not practice hand hygiene because other colleagues do not practice hand hygiene. Twenty-five percent (25%) of the respondents stated

other reasons why they do not follow appropriate guidelines for hand hygiene which included forgetfulness, the time factor, length of the steps and some just do not practice hand hygiene.

#### **4.4 The practice of appropriate hand hygiene according to the recommended guidelines**



***Figure 5: Respondents on number of times they perform hand hygiene***

Most of the respondents (40%) perform hand hygiene 3-5 times while 27.5% of the respondents perform hand hygiene more than 5 times, 22.5% of respondents perform hand hygiene 1-2 times and only 10% of the respondents do not have any number of times they perform hand hygiene.

**Table 8: Respondents on the practice of appropriate hand hygiene according to the recommended guidelines**

<b>Statement</b>		<b>Agree</b>	<b>Disagree</b>
The frequency of hand hygiene required makes it difficult for me to carry it out as often as necessary	n	25	15
	%	62.5	37.5
<b>Statement</b>		<b>Agree</b>	<b>Disagree</b>
I often practice hand hygiene after interacting with other students.	n	24	16
	%	60	40
I sometimes forget the rules of cleaning my hands.	n	21	19
	%	52.5	47.5
Hand hygiene is an essential part of my role	n	32	8
	%	80	20
I sometimes miss out on hand hygiene because I forget.	n	28	12
	%	70	30

Most of the respondents (62.5%) agreed that the frequency of hand hygiene required makes it difficult for them to carry it out as often as necessary while 37.5% disagreed with the statement.

More than half of the respondents (60%) agreed that they often practice hand hygiene after interacting with other students while 40% disagreed with the aforementioned statement.

Most of the respondents (52.5%) agreed that they sometimes forget the rules of cleaning their hands while 47.5% of the respondents disagreed with the statement.

Eighty percent (80%) of the respondents agreed that hand hygiene is an essential part of their role while 15% of respondents disagreed with the statement.

The majority of the respondents (70%) agreed that they sometimes miss out on hand hygiene because they forget while 30% disagreed with the statement.

#### 4.5 Attitude of students towards hand hygiene

**Table 9: The attitude of respondents toward hand hygiene**

Statement		Agree	Disagree
I adhere to correct hand hygiene practices at all times.	n	24	16
	%	60	40
Adhering to hand hygiene practices is easy in the current setup.	n	26	14
	%	65	45
I feel resentful when others do not adhere to the rules of hand hygiene	n	24	16
	%	60	40
I am reluctant to ask others to engage in hand hygiene.	n	22	18
	%	55	45
Sometimes, I have more important things to do than hand hygiene	n	24	16
	%	60	40
I advise others to abide by the rules of hand hygiene	n	31	9
	%	77.5	22.5

Most of the respondents (60%) agreed that they adhere to correct hand hygiene practices at all times. The majority of the respondents (65%) agreed that adhering to hand hygiene practices is easy in the current setup while 45% disagreed with the statement.

More than half of the respondents (60%) agreed that they feel resentful when others do not adhere to the rules of hand hygiene while 40% disagreed with the aforementioned statement.

Most of the respondents (55%) agreed that they are reluctant to ask others to engage in hand hygiene while 45% of the respondents disagreed with the statement. Sixty percent (60%) of the respondents agreed that sometimes, they have more important things to do than to practice hand hygiene while 40% of respondents disagreed with the statement.

The majority of the respondents (77.5%) agreed that they advise others to abide by the rules of hand hygiene while 22.5% disagreed with the statement.

## **CHAPTER FIVE**

### **DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS**

#### **5.0 Introduction**

This chapter provides an in-depth look at the major findings that emerged out of the research, comparison of the analyzed data with findings from other literature, conclusions, and recommendations.

#### **5.1 Discussions**

##### **5.1.1 Knowledge of student nurses on hand hygiene**

The study found that all the respondents know the steps for hand hygiene. This finding is similar to a study conducted by Mahmoud (2015), who reported that 28% of the respondents had poor knowledge and 72% of the respondents had moderate knowledge regarding hand hygiene and this showed the importance of improving the current training programs targeting hand hygiene practices among nursing students.

The study found that 39% of the respondents know about the procedure for alcohol hand rub and 61% also know about the procedures for handwashing. This finding is similar to a study conducted by Mahmoud (2015), who reported that a higher proportion of students (52.0%) knew about alcohol-based hand rub.

Mehta and Tripathi (2019) found that most of the study participants exhibited moderate levels of knowledge and practice with the marginal difference between the two study groups while nursing students were found to exhibit a remarkably higher level of attitude than staff nurses. This finding is in line with the study which found that 5% of the respondents do not know whether hand hygiene should be performed in sequence while 5% of the respondents disagree that hand hygiene should be performed in sequence and the majority of the respondents (90%) agree that hand hygiene should be performed in sequence.

Few of the respondents (5%) do not know whether hand hygiene should be performed in sequence while 5% of the respondents disagree that hand hygiene should be performed in sequence and the majority of the respondents (90%) agree that hand hygiene should be performed in a sequence which is similar to a study conducted by Raghunath and Hanumantappa (2014) who reported that when asked about the correct technique of hand washing, 89 out of 98 medical students (91.3%) and 45 of 46 nursing students (97.8%) said they knew the correct technique of handwashing.

Five percent (5%) of the respondents do not know hand rubbing causes skin dryness more than handwashing while 35% disagree that hand rubbing causes skin dryness more than handwashing and the majority of the respondents (60%) agree that hand rubbing causes skin dryness more than handwashing. This finding is contrary to the report given by Thakker and Jadhav (2015) that 7.5% of the participants had good knowledge regarding hand hygiene while the majority of the respondents (69.1%) had moderate knowledge and overall low scores on hand hygiene knowledge indicated that undergraduate healthcare students require increased emphasis on hand hygiene education, behavior, and improvement in their current primary training as well as undergraduate curricula.

### **5.1.2 Factors that hinder student nurses to perform effective hand hygiene**

More than half of the respondents (62.5%) agree that inadequate liquid soap for hand hygiene hinders student nurses from performing appropriate hand hygiene according to the recommended guidelines while 30% disagree that inadequate liquid soap for hand hygiene hinders student nurses from performing appropriate hand hygiene according to the recommended guidelines and 2.5% do not know that inadequate liquid soap for hand hygiene hinders student nurses from performing appropriate hand hygiene according to the recommended guidelines. Most of the respondents (62.5%) agree that inadequate paper tissue/towel hinders student nurses from performing appropriate hand hygiene according to the

recommended guidelines and 37.5% of the respondents disagree that inadequate paper tissue/towel hinders student nurses from performing appropriate hand hygiene according to the recommended guidelines. These findings were in line with a study conducted by Rynga, Kumar, Gaiind, and Rai (2015) in which the necessary infrastructure of the College was surveyed for optimal hand hygiene practices. It was observed that at many places, sinks were not easily accessible and there was no facility to dry hands after hand hygiene. Alcohol-based hand rubs were present but not easily accessible. Posters illustrating hand hygiene techniques were present at a few places. This study clearly shows that there is a need for the development of strategies to improve hand hygiene compliance among student nurses.

Most of the respondents (60%) agree that insufficient time for hand hygiene hinders student nurses from performing appropriate hand hygiene according to the recommended guidelines while 37.5% of the respondents disagree that insufficient time for hand hygiene hinders student nurses from performing appropriate hand hygiene according to the recommended guidelines and 2.5% do not know that insufficient time for hand hygiene hinders student nurses from performing appropriate hand hygiene according to the recommended guidelines. Few of the respondents (17.5%) agree that they do not perform hand hygiene because other colleagues do not practice hand hygiene while most of the respondents (77.5%) disagree that they do not perform hand hygiene because other colleagues do not practice hand hygiene and 5% do not know that they do not perform hand hygiene because other colleagues do not practice hand hygiene. Few of the respondents (25%) stated other reasons why they do not follow appropriate guidelines for hand hygiene which include forgetfulness, the time factor, length of the steps and some just do not perform hand hygiene which is contrary to a study conducted by Rabecca (2017) in which the results showed that institutionally there were no rewards or encouragements for hand hygiene, no sanctions for non-compliers and no workshops, seminars and educational courses on hand hygiene.

### **5.1.3 How often student nurses practice hand hygiene**

Most of the respondents (39.5%) perform hand hygiene 3 - 5 times while 26.3% of the respondents perform hand hygiene more than 5 times, 23.7% of the respondents perform hand hygiene 1 - 2 times and 10.5% of the respondents do not have any number of times they perform hand hygiene. These findings were in line with a study conducted by Paudel, Ghosh, and Adhikari (2017) which found that 65.4% of the participants followed a good hand hygiene practice while 10.3% showed inadequate hand hygiene practice.

A study by Jayan et. al (2019) reported that most of the respondents (98.95%) had practiced good hand hygiene and although the practice of hand hygiene was good among respondents in this study, lack of running water and unavailability of alcohol-based hand rub remain major constraints. In the study, most of the respondents (62.5%) agree that the frequency of hand hygiene required makes it difficult for them to carry it out as often as necessary while 37.5% disagree with the statement. More than half of the respondents (60%) agree that they often practice hand hygiene after interacting with other students while 40% disagree with the aforementioned statement.

### **5.1.4 The attitude of student nurses towards effective hand hygiene**

Most of the respondents (60%) agree that adhering to hand hygiene practices is easy in the current setup while 45% disagree with the statement. More than half of the respondents (60%) agree that they feel resentful when others do not adhere to the rules of hand hygiene while 40% disagree with the aforementioned statement. This finding is contrary to a study conducted by Khan, Akhtar, Jamila, Bano, and Rafique (2021) who reported that the participants agreed that hand hygiene is often not adhered to because of busy lecture schedule on campus (75.27%), hand hygiene should be done when in contact with people and fomites (97.8%) and hand washing can be protective for student nurses (99.4%).

Sixty percent (60%) of the respondents agree that sometimes, they have more important things to do than hand hygiene while 40% of respondents disagreed with the statement. The majority of the respondents (77.5%) agree that they advise others to abide by the rules of hand hygiene while 22.5% disagree with the statement. This finding is not in line with a study conducted by Arbabisarjou (2016) who reported that the majority of the student nurses (70.5%) had a positive attitude towards hand hygiene.

## **5.2 Conclusions**

The following conclusions were drawn from the study;

1. The majority of the respondents (n=40, 100%) have good knowledge of proper hand hygiene.
2. The majority of the respondents (95%) believe that artificial fingernails could increase the likelihood of colonization of hands with harmful germs.
3. The majority of the respondents (90%) agree that hand hygiene should be performed in sequence.
4. The majority of the respondents (60%) agree that hand rubbing causes skin dryness more than handwashing.
5. Most of the respondents (60%) agree that insufficient time for hand hygiene hinders student nurses from performing appropriate hand hygiene according to the recommended guidelines.
6. Eighty percent (80%) of the respondents agree that hand hygiene is an essential part of their role.
7. The majority of the respondents (77.5%) agree that they advise others to abide by the rules of hand hygiene.

### **5.3 Recommendations**

Based on the findings of the study, the following recommendations are made:

1. Artificial fingernails should not be worn by student nurses and natural ones should also be kept short because it could increase the likelihood of colonization of hands with harmful germs.
2. Hand hygiene posters and literature should be placed at vantage points to help students to perform hand hygiene in proper sequence.
3. Student nurses should be encouraged to use the easiest form of hand hygiene when they do not have enough time to perform them.
4. Students should also be encouraged to remind others to perform hand hygiene when they forget.
5. There should be rewards for compliance and punishment for non-compliance to hand hygiene protocols.

## REFERENCES

- Addo, H. (2018, September 25). *Hand washing knowledge and practices among schools in the Kintampo Municipality of Ghana*. Retrieved from researchgate.net:  
[https://www.researchgate.net/publication/325304255\\_Hand\\_washing\\_knowledge\\_and\\_practices\\_among\\_public\\_primary\\_schools\\_in\\_the\\_Kintampo\\_Municipality\\_of\\_Ghana](https://www.researchgate.net/publication/325304255_Hand_washing_knowledge_and_practices_among_public_primary_schools_in_the_Kintampo_Municipality_of_Ghana)
- Anjum, C., Carleene, B., Raquel, L., & Cafazzo, J. A. (2010, October 13). *Challenges of Hand Hygiene in Healthcare: The Development of a Tool Kit to Create Supportive Processes and Environments*. Retrieved from  
<https://www.longwoods.com/content/21968/healthcare-quarterly/challenges-of-handhygiene-in-healthcare-the-development-of-a-tool-kit-to-create-supportive-process>
- Arbabisarjou, A. (2016, August 1). *Knowledge, Attitude, and Performance of Nurses toward*
- Asaduddin, M., & Nair, S. S. (2014, February 6). *Knowledge, Attitude, and Practice of Hand*
- Centre for Disease Control [CDC]. (2016, March 1). *Hand Hygiene*. Retrieved from cdc.gov:  
<https://www.cdc.gov/oralhealth/infectioncontrol/faqs/hand-hygiene.html>
- Centre for Disease Control. (2021, February 21). *Cleaning, Disinfection, and Hand Hygiene in Schools – a Toolkit for School Administrators*. Retrieved from  
<https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/cleandisinfect-hygiene.html>
- Habits of Ghanaian Youths in Accra*. Retrieved from ncbi.nlm.nih.gov:  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6603880/>

*Hand Hygiene in Hospitals*. Retrieved from <https://europepmc.org/article/pmc/5016353>

[https://www.researchgate.net/publication/230653174\\_Hand\\_hygiene\\_knowledge\\_and\\_practices\\_of\\_nursing\\_students\\_in\\_Singapore](https://www.researchgate.net/publication/230653174_Hand_hygiene_knowledge_and_practices_of_nursing_students_in_Singapore)

*Hygiene among Nursing Students at a Tertiary Health Care Centre in Raichur, India.*

Jayan, R., Paul, R., Abraham, R., Roy, R., Dominic, R., Abraham, R., . . . Aranha, P. R. (2019, August 03). *Attitude of health care professional students towards hand hygiene.*

Jemal, S. (2018, November 22). *Knowledge and Practices of Hand Washing among Health Professionals in Dubti Referral Hospital, Dubti, Afar, Northeast Ethiopia.* Retrieved from [hindawi.com](http://hindawi.com):  
<https://www.hindawi.com/journals/apm/2018/5290797/>

Khan, M. H., Akhtar, Z., Jamila, Bano, N., & Rafique, S. (2021, May 3). *Knowledge, Attitude, and Practice toward Hand Washing Among Undergraduate Nursing Students in Lahore.*

Kingston, N. O. (2017). *Survey of attitudes and practices of Irish nursing students towards hand hygiene.* Retrieved from <https://www.semanticscholar.org/paper/Survey-of-attitudes-andpractices-of-Irish-nursing-Kingston->

Mahmood, S. E. (2015, October). *Hand hygiene practices among nursing students: importance of improving current training programs.* Retrieved from <https://imsear.searo.who.int/handle/123456789/175616>

Mehta, A., & Tripathi, K. (2019). *Knowledge, attitude and practices of hand hygiene among nurses and nursing students in a tertiary health care center of Central India: a*

*questionnaire-based study*. Retrieved from

<https://www.ijcmph.com/index.php/ijcmph/article/view/5493>

Nasirudeen, A. M. (2017, december 9). *Hand hygiene knowledge and practices of nursing students in Singapore*. Retrieved from researchgate.net:

0%E2%80%99Connell/613b54fa7af593937b23fc8d95d2e4ff45a72fb8

Oppong, T. B., Yang, H., Amponsem-Boateng, C., & Duan, G. (2019, June 3). *Hand Hygiene*

Oyapero, A., & Oyejoke. (2018, November 27). *An assessment of hand hygiene perception and practices among undergraduate nursing students in Lagos State*. Retrieved

from ncbi.nlm.nih.gov: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6282479/>

Paudel, I. S., Ghosh, V., & Adhikari, P. (2017, June 30). *Knowledge, Attitude, and Practice of nursing students regarding hand hygiene in the Western region of Nepal*. Retrieved from

[https://www.researchgate.net/publication/312564700\\_Knowledge\\_Attitude\\_and\\_Practice\\_of\\_nursing\\_students\\_regarding\\_hand\\_hygiene\\_in\\_Western\\_region\\_of\\_Nepal](https://www.researchgate.net/publication/312564700_Knowledge_Attitude_and_Practice_of_nursing_students_regarding_hand_hygiene_in_Western_region_of_Nepal)

Paul, G. M., & Loveline, M.-T. (2019, December 28). *An Institution-Based Assessment of*

Rabecca, M. (2017). *Factors associated with noncompliance to hand hygiene*. Windoek.

Raghunath, P., & Hanumantappa, R. (2014, February 06). *Knowledge, Attitude, and Practice of Hand Hygiene among Medical and Nursing Students at a Tertiary Health Care Centre in Raichur, India*. Retrieved from

<https://europepmc.org/article/pmc/4045463#sec1>

Retrieved from europepmc.org: <https://europepmc.org/article/pmc/4045463#sec1>

Retrieved from [https://saudijournals.com/media/articles/SJNHC\\_47\\_158-163\\_FT.pdf](https://saudijournals.com/media/articles/SJNHC_47_158-163_FT.pdf)

*Students' Hand Washing Behaviour*. Retrieved from hindawi.com:

<https://www.hindawi.com/journals/bmri/2019/7178645/>

Rynga, D., Kumar, S., Gaind, R., & Rai, A. K. (2015). Hand hygiene compliance and associated factors among student nurses in tertiary. *International journal of infection control*, 1-2.

Thakker, V. S., & Jadhav, P. R. (2015, october 4). *Knowledge of hand hygiene in undergraduate medical, dental, and nursing students: A cross-sectional survey*.

Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4776613/>

Wiley, J. (2017, March 14). *The hand hygiene compliance of student nurses during clinical placements*. Retrieved from

<https://onlinelibrary.wiley.com/doi/abs/10.1111/jocn.13811>

## APPENDIX

### QUESTIONNAIRE

#### HOLY FAMILY NURSING AND MIDWIFERY TRAINING COLLEGE, BEREKUM

#### INTRODUCTION

Dear Respondent,

We are students of the above institution researching the topic: “Attitude and practice of hand hygiene among student nurses at Holy Family Nursing and Midwifery Training College, Berekum”.

Kindly answer the under-listed questions by ticking (✓) the appropriate box or writing in the space provided. Any information you provide is confidential. Your opinion is neither considered right nor wrong. You can choose to withdraw your participation at any time. It will take approximately 30 minutes to answer this questionnaire. Thank you.

**PLEASE TICK [✓] THE APPROPRIATE BOX WHERE APPLICABLE**

#### SECTION A: DEMOGRAPHIC DATA

1. Age: (a) 18 – 23 years [ ] (b) 24 - 29 years[ ] (c) 30 - 35 years[ ] (d) Above 35 years[ ]
2. Sex: (a). Male [ ] (b) Female [ ] c. Unidentified [ ]
3. Religious background: (a) Christian [ ] (b) Islam [ ] (c) Traditionalist [ ]  
(d) Other, specify.....

4. Marital status: (a) Single [ ] (b) Married [ ] (c) Divorced [ ]
5. Program: (a) RGN [ ] (b) RM [ ] (c) PBM [ ]
6. Year Group: (a) First-year [ ] (b) Second-year [ ] (c) Third-year [ ]

## **SECTION B: KNOWLEDGE OF HAND HYGIENE**

7. Do you know the steps of hand hygiene?
- (a) Yes [ ] (b) No [ ]
8. If yes, which of the steps do you know? **(Please tick as many that apply)**
- (a) Handwashing [ ] (b) Alcohol hand rub [ ]
9. What is the least time necessary to sterilize your hands with alcohol to eliminate most germs in your hands?
- (a) < 15 seconds [ ] (b) 20 seconds [ ] (c) 1-5 minutes [ ] (d) Until it is dry [ ]
10. Which of the following should be avoided because it is associated with an increased likelihood of colonization of hands with harmful germs?
- (Please tick as many that apply)**
- (a) Wearing jewellery [ ] (b) Damaged skin [ ] (c) Artificial fingernails [ ]
11. Hand washing and hand rubbing are recommended to be performed in sequence.
- (a) Agree [ ] (b) Disagree [ ] (c) Do not know [ ]

12. Hand rubbing causes skin dryness more than hand washing

- (a) Agree [ ] (b) Disagree [ ] (c) Do not know [ ]

**PART THREE: FACTORS THAT HINDER STUDENT NURSES TO PERFORM APPROPRIATE HAND HYGIENE ACCORDING TO THE RECOMMENDED GUIDELINES**

13. Mention 5 factors that hinder student nurses from performing hand hygiene

- a. ....
- b. ....
- c. ....
- d. ....
- e. ....

14. Mention any two reasons why you do not follow appropriate guidelines for hand hygiene.

.....

.....

**PART FOUR: THE PRACTICE OF APPROPRIATE HAND HYGIENE ACCORDING TO THE RECOMMENDED GUIDELINES**

15. How many times do you perform hand hygiene?

- (a) 1 - 2 times [ ] (b) 3 - 5 times [ ] (c) More than 5 times [ ] (d) None [ ]

<b>No.</b>	<b>Statement</b>	<b>Agree</b>	<b>Disagree</b>
16.	The frequency of hand hygiene required makes it difficult for me to carry it out as often as necessary.		
17.	I often practice hand hygiene after interacting with other students.		
18.	I sometimes forget the rules of cleaning my hands.		
19.	Hand hygiene is an essential part of my role.		
20.	I sometimes miss out on hand hygiene because I forget.		

#### **PART FIVE: ATTITUDE OF STUDENTS TOWARD HAND HYGIENE**

<b>No.</b>	<b>Statement</b>	<b>Agree</b>	<b>Disagree</b>
21.	I adhere to correct hand hygiene practices at all times.		
22.	Adhering to hand hygiene practices is easy in the current setup.		
23.	I feel resentful when others do not adhere to the rules of hand hygiene.		
24.	I am reluctant to ask others to engage in hand hygiene.		

NATIONAL CATHOLIC HEALTH SERVICE (DIOCESE OF SUNYANI)  
**HOLY FAMILY NURSING AND MIDWIFERY TRAINING COLLEGE  
BEREKUM**



**BANKERS:**  
Ghana Commercial Bank, Berekum  
Agric Development Bank, Berekum  
Fidelity Bank, Berekum



P. O. Box 21,  
Berekum, B/A  
Ghana, W/Africa  
Tel. 0352222124  
Fax: 0352222474

Our Ref. ....HPNMT/CC/011/052523

Your Ref. ....

Date ..... May 25, 2023

Amos OWUSU  
Holy Family NMTC  
Post Office Box 21  
Berekum

Dear Mr. Owusu

**PERMISSION TO CONDUCT RESEARCH**

With reference to your Memorandum dated May 19, 2023, I write to notify you that the students listed below have been granted permission to conduct their research in the College on the topic 'Attitude and Practice of Students of Holy Family Nursing and Midwifery Training College, Berekum, towards Hand Hygiene'

1. Opoku Adelaide Yeboah
2. Opoku Cindy Boahen

Thank you.

Yours sincerely

Monica A. Ocran (CCNM)  
Principal

**PRINCIPAL**  
HOLY FAMILY NURSING AND  
MIDWIFERY TRAINING COLLEGE  
BEREKUM