KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

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DEPARTMENT OF REGISTERD GENERAL NURSING

DIPLOMA PROGRAMMES

FACTORS THAT CONTRIBUTE TO THE SPREAD OF NOSOCOMIAL INFECTION AMONG PATIENTS AT BEREKUM, HOLY FAMIY HOSPITAL IN BEREKUM EAST MUNICIPALITY IN THE BONO REGION OF GHANA.

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BEREKUM

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DECLARATION

We hereby declare that this submission is our own 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 diploma of the University, except where due acknowledgement has been made in the text.

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ABSTRACT

Purpose of the study: Therefore, the aim of this study is to identify the factors that contribute to the spread of nosocomial infection among patients at Berekum, Holy Family Hospital in the Brong region of Ghana.

Basic design of the study: The study adopted a cross-sectional design with a quantitative approach.

Sampling technique: This research project utilizes stratified random sampling method for healthcare professionals and simple random method for patients.

Data collection tool: The study adopted questionnaire as the data collection method.

Results: The survey involved 54 participants, primarily aged between middle-aged category (31-50 years old) for patients respondents and reveals a predominance of younger individuals, particularly in the age range of 18-30 for healthcare professionals. The healthcare professionals were 24 whiles the patients were 30. Sex of respondents, with respect to healthcare professionals 54.2% of the respondents are male, while 45.8% are female whiles Sex of respondents, with respect to patients 36.7% of the respondents are male, while 63.3% are female. As male respondents were predominant in healthcare professionals the inverse happens among patients. Majority of the respondents were married. There is a significant proportion of early-career healthcare professionals, with a relatively smaller portion having more extensive experience. Participants(patients) demonstrated below satisfactory level of knowledge(58.5%) towards HAIs. Healthcare professionals response rate towards hand hygiene practices was impressive (95.8%) labelling them as a non-contributory factor to HAIs. Overall patients personal hygiene compliance level demonstrated was 67.5% in these categories; hand hygiene(67.5%), body hygiene(72.5%) and oral hygiene (65.0%). These suggest a possible

contributory factors to HAIs at the wards in relation with patient knowledge level and hygienic practices.

Conclusions: The findings from this study would offer critical insights into the knowledge levels and personal hygiene practices among patients towards HAIs. This information could play a pivotal role in effectively planning and implementing measures to reduce the occurrences of HAIs at the various wards of Berekum, HFH.

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To you all, We say ‘thank you’ and We wish you all the best in your endeavors; may others show you as much care and help as you showed Us

DEDICATION

We dedicate this research study to our beloved family (father, mother, brothers and sisters)

ABBREVIATIONS

CDC-Centre for Disease Control and prevention

CDCP- Center for Disease Control and Prevention

HAIs- Healthcare Associated Infections or Hospital Acquired Infections

HCWs-Health Care Workers

IPC-Infection Prevention and Control

SSI-Surgical Site Infections

WHO-World health organization,

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CHAPTER ONE

INTRODUCTION

1.0 Background of the study

Nosocomial infection (NI) which also called "hospital-acquired or health care-associated infection" is a serious public health issue affecting hundreds of millions of people every year worldwide (WHO, 2016). NI is defined as an infection occurring in a patient admitted to the health-care settings for more than 48 but without any evidence that the infection was present or incubating at the time of admission (WHO, 2016). A study in intensive care units from 25 countries reported on device associated infections (a type of HCAI) that, crude excess mortality in adult patients was 18.5% for catheter related urinary tract infection, 23.6% for catheter related blood stream infection and 29.3% for ventilator associated pneumonia (WHO, 2011). Healthcare facility associated infections which are also known as nosocomial infections are acquired during healthcare delivery from patient or healthcare staff or through contaminated equipment's, instruments, hands, bed linen or air droplets (Al-Khalidi, 2017). Health care-associated infections are infections that are not manifest at the time of admission to a hospital or a health care facility but are acquired in the clinical setting (Nejad, Allegranzi, Syed, Ellis & Pettet, 2011). Healthcare workers are exposed to microorganisms that are in patients. Without proper infection prevention and control (IPC) practices, these microorganisms can get transferred from one patient to another by healthcare workers. By this process, a patient who comes to the hospital to be attended to may end up acquiring an infection from the hospital setting. There are various means by which infection is spread to susceptible patients during healthcare delivery. Infection may spread to the patient through healthcare staff, contaminated equipment, bed linens or air droplets. Mathur, (2011) argues that HCAI continue to draw the attention of various stakeholders such as patients, insurers, government and regulatory bodies

mainly because of the recognition that HCAIs are preventable. Studies have shown that hand hygiene contributes greatly to the prevention and control of infections in clinical settings (WHO, 2005; WHO, 2012). It is in line with this recognition that governments and regulatory bodies take steps towards the provision of guidelines to help prevent and control infections in hospitals and other healthcare facilities. In Ghana, the Ministry of Health has put in place a policy to help in infection prevention and control. This is the National Policy and Guidelines for Infection Prevention and Control in Health Care Settings in Ghana (IPC Policy). The IPC Policy is meant to give direction to healthcare personnel and clients for the prevention and control of infection within health care settings in order to ensure patients safety and that of health workers. The policy is based on research findings and recommendations from experts as well as professional judgement indicating the need for strategies to handle infection. Standard precautions, listed in the policy guidelines are based on the principle that all blood, body fluids, secretions, excretions, non-intact skin and mucous membranes may contain transmissible infectious agents. These standard precautions include hand hygiene, the use of appropriate personal protective equipment, the use of aseptic technique to reduce exposure to microorganisms and management of sharps, spills, linen, and waste to maintain a safe environment.

According to Malliarou, Sarafis, Zyga, and Constantinidis (2013), health workers generally have a positive attitude towards infection prevention practices such as hand cleaning, but compliance rates are below 30%. Studies have shown that knowledge, attitude and compliance with IPC guidelines among health workers is low. For example, a study from three regional hospitals about healthcare providers' knowledge towards IPC in Trinidad and Tobago indicated very low knowledge of 20.3% against the better practice of 44.0% (Unakal et al., 2017). Another study by Gulilat and Tiruneh (2014), who assessed the knowledge, attitude and practice of health care workers on infection prevention in a health institution in Bahir Dar city

administration and found high knowledge score of 84.5% translated to low practice of 54.2%. In Hong Kong, a study by Tai, Mok, Ching and Pittet (2009) reported that health workers acknowledge that 75% of HAI can be prevented by hand hygiene.

Globally, the Center for Disease Control and Prevention estimated in 2017 that every year about 1.70 million Americans are affected with hospital-associated infections with all types of microorganisms with some microorganisms difficult to treat with antibiotics (Al-Khalidi, 2017). The CDCP also reported that one out of every 31 patients admitted to a health facility has at least one healthcare-associated infection (CDC, 2018). A point-prevalence survey conducted in the United States in 2015 showed that the most common HAI in acute hospital settings is pneumonia, followed by gastrointestinal infections, SSI, other infections of the systems, as mentioned earlier, bloodstream infections, and urinary tract infections (Magill, 2018). The prevalence of these types of infections has changed from point-prevalence surveys in 2011, which showed pneumonia (21.8%) and SSI (21.8%) as the most common, followed by gastrointestinal (17.1%), urinary tract (12.9%), bloodstream (9.9%) and other infections. Interestingly, this same study showed that NV-HAP is the most common type of HAI in the acute health care setting, which is consistent with studies conducted in Europe (Suetens 2018; Ewan 2017).

According to Mbim et al., (2016), 3.4% to 10.9% of nosocomial infections usually results in deaths in most developed countries and this is expected to be higher in sub-Saharan Africa and other developing countries. In developing countries where the healthcare system is already overstretched, the risk of nosocomial infection is 20 folds higher than developed countries (Bello et al., 2011). Nosocomial infection prevalence rate in developing countries is 15.5% per 100 patients and this persist due to lack of effective national infection prevention and control policies infections prevention control personnel and lack of compliance to hospital acquire infection guidelines (Labi et al., 2018). Sub-Saharan African countries have a high incidence

rate of hospital-acquired infections ranging from 2.0 – 49.0%; this is more so with patients admitted to the critical intensive unit where the rate is estimated to range from 21.2 - 35.6%. The prevalence of hospital-acquired infections in some African countries such as Burkina Faso, Mali, Gabon, Uganda, Cameroon varies between 1.6% to 28.7% (Mbim et al.,2016). For instance, prevalence of nosocomial infections in Ghana is reported to be 6.7% (Mbim et al.,2016).

A survey conducted in Ghana among ten hospitals on hospital acquires infections reported an overall prevalence rate of 8.2% (Labi et al., 2018). Furthermore, Labi et al (2018) found surgical site infection to be the leading nosocomial infection nationwide. The study aims to investigate the potential causes of these infections at Berekum Holy Family Hospital and to identify strategies for preventing and controlling them. The results of this study could provide valuable insights for healthcare providers and policymakers on how to improve infection control practices and reduce the incidence of nosocomial infections in the hospital setting.

1.1 Problem Statement

The prevalence of HAI is high and calls for concerns as to what is not being done right. It is reported by WHO, (2016) that, of every 100 hospital admissions, seven (7) in developed and ten (10) in developing countries, contract at least one HAI. Studies have shown that, most HAIs are transmitted by health personnel as a result of failure to practice standard precautions such as hand hygiene or to change gloves between client contacts (Delaune, and Ladner, 2010). By failing to wash hands and change gloves between patient contacts, microorganisms can get transferred from one patient to another as well as to other HW and health delivery equipment. It is stated by WHO (2016), that some factors that put patients at risk of HAIs are more specific to settings with limited resources and they include, under staffing, overcrowding, poor knowledge and application of basic IPC measures by patients and health workers, poor

infrastructure, absence of local and national guidelines and policies etc. All these factors impact directly on compliance with IPC.

In Ghana, a study by Hayeh (2012), conducted at the Ridge Hospital reported that knowledge and compliance with infection prevention and control among the health workers were moderate. This indicates that, there is the need for more efforts to be directed at increasing knowledge and compliance of healthcare workers (HW) with the IPC policy. It also calls for more of such studies to be conducted to find out the knowledge and compliance with IPC policy guidelines at hospitals and other healthcare facilities in Ghana.

In addition, anecdotal reports suggest that, there are several cases of infections in hospitals and healthcare facilities in Ghana. Previous studies have been conducted on HAls in urban and rural settings in Ghana These studies have covered prevalence and determinants of nosocomial infections within the Korle Bu, Komfo Anokye and Tamale Teaching Hospitals (Newman, 2009; Yawson & Hesse, 2013; Datkwah, 2015; Labi et al., 2018). Similarly, the Greater Accra, Central, Eastern, Brong Ahafo, Upper West and Volta Regional Hospitals (Tagoe el al., 2011; Tagoe & Desbordeso, 2012; Hayeb & Esena, 2013; Labi et a1., 2018) and the Ashaiman Poly Clinic (Essien-Baidoo et al., 2018) have also benefited from studies on HAl's. Irrespective of this study none of them was able to dive into patient's knowledge aspect on HAl's of which this current study will provide. Beyond these studies, satisfactory progress has not been made in that space.

The Berekum Holy Family Hospital has been chosen as it plays a key role in providing, quality healthcare to service personnel as well as the general public. A notice beforehand indicated that prolong hospital stay has become rampant at the various wards due to exacerbation of their condition after admission meanwhile, treatment has not been ceased. With such patients when sample is taking again after two days stay at the ward, the results indicate higher number of

WBC's as compare with the first sample taken during admission. Blood culture and sensitivity test indicates presence of microbial infections (Annual report of Berekum HFH, 2022). The protest against such causes has been channel unto the health workers alone leaving the patients behind. In view of this and since no current study had been conducted to assess the factors that contributes to nosocomial infections at Berekum Holy Family Hospital. The researchers therefore, decided to undertake this study to find the determinants of nosocomial infections by; assessing patients level of knowledge, nonconformity to hand washing practice among health staff and patient and to probe further if poor ward hygiene can contribute to the spread of nosocomial infection at Berekum Holy Family Hospital. The study seeks to examine the burden of such infections this facility in a bid to chart a new path towards quality health care among the health staff therein.

1.2 General Objectives

To identify the factors that contribute to the spread of nosocomial infection among patients at Berekum, Holy Famiy Hospital in the Bono Region of Ghana.

1.3 Specific Objectives

1.To investigate patients level of knowledge on nosocomial infection.

2.To investigate if nonconformity to hand washing practice can contribute to nosocomial infection.

3.To investigate if lack of personal hygiene can contribute to the spread of nosocomial infection.

1.4 Operational Definition of Terms

1. **Bloodstream;** Refers to the blood flowing through the circulatory system
2. **Healthcare;** Refers to the preservation of mental and physical health by preventing or treating illness or diseases through services offered by the health profession
3. **Healthcare professionals;** Refers to workers who work at the various treatment centers such as hospitals and clinics with the aim to cure and prevent disease, and also to maintained the health of an individual.
4. **Hygiene;** Refers to free from dirt and germs.
5. **Microbial;** Refers to tiny organisms not visible to the eyes but has the potential to cause a disease
6. **Non-conformity;** Refers to not obeying to the standard protocols at a particular place
7. **Nosocomial infections;** Refers to infections patient did not come along with during admission but acquired it from the ward after two days of admission.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Our healthcare delivery system is completely not independent on IPC practices to avoid nosocomial infections.There are very few studies on the work practices of orderlies in our health facilities, yet their role ranging from keeping the hospital environment clean and safe to transfer of patients between departments is highly depended on how to maintain the overall hospital efficiency (Stisen et al., 2016). Therefore there is the need to include orderlies in this current study. This section entails a review of literature on nosocomial infection, factors that contribute to that and infection prevention and control practices.

2.1 Nosocomial infection

According to Bhore (2015), nosocomial infection is an infection acquired by the patient during admission and was never present 48 hours before admission or infection acquired in healthcare delivery mediated environment. For nosocomial infection to be confirmed the following must be fulfilled: it must be 48 hours after admission, must be up to 72 hours after discharge, must be up to 30 days after an operation and admission to a health facility with a condition other than the infection (Stubblefield, 2016).

2.2 Types of nosocomial infection

Base on biological and clinical criteria, Centers for Disease Control for surveillance has classified hospital acquire infections into 13 types with various infection sites of 50 (Khan et al., 2015). A survey in Ghana by Labi et al., (2018) in ten hospitals on nosocomial infections identified the leading infection to be SSI (32.6%), followed by bloodstream infection (19.5%), the urinary tract infections (18.5%) and respiratory tract infections (16.3%).

Even though bloodstream infection (BSI) is the frequent type of hospital-acquired infection, the other types are surgical site infection (SSI), Pneumonia; e.g. ventilator-associated pneumonia (VAP), and urinary tract infection (Custodio, 2016).

According to Rogers (2016), symptoms of infection may vary according to the type of infection and some of the symptoms are: discharged from the wound, fever, cough, shortness of breath, burning with urination or difficulty urinating, headache, nausea, vomiting, and diarrhea.

Centre for disease and control (2018) classified nosocomial infections into catheter-associated urinary tract infections, central line-associated bloodstream infection, surgical site infection, and ventilator-associated pneumonia.

2.3 Causes of nosocomial infections

According to Rogers, (2016), nosocomial infections are caused by bacteria, fungus, and viruses and 90 percent of all hospital-acquired infections are caused by bacteria. Some of the specific agents implicated in nosocomial infection are: Streptococcus spp., Acinetobacter spp., Enterococci, Pseudomonas aeruginosa (P. aeruginosa), coagulase-negative staphylococci, Staphylococcus aureus (S. aureus), Bacillus cereus (B. cereus), Legionella and Enterobacteriaceae family members including Proteus mirabilis, Klebsiella pneumonia (K. pneumonia), Escherichia coli (E. coli), Serratia marcescens (Khan et al., 2015). Some of the predisposing factors for nosocomial infections are endotracheal intubation, intensive care unit, antibiotics, surgery, chronic disease, old age, cauterization, and depressed immune system.

2.4. Mode of transmission

To prevent nosocomial infection, it is very important to know the mode of transmission. A lot of microorganisms require living host to survive while it may not survive outside a living host.

There are various modes of transmission and some of them are direct contact, indirect contact, airborne, droplets, and common vehicle.

According to Khan et al., (2015), one microbe may have more than one mode of transmission. Examples of microbes with their mode of transmission are presented below: Staphylococcus aureus. This can be transmitted through direct contact with infected person skin or through contaminated surfaces such as door handles, towels, benches and taps.

2.5. Disease infection chain

It is very important to understand infection transmission chain for infection prevention and control practice. According to Olin (2012), infection is the entry of pathogenic agent and multiplication of this pathogenic agent in living tissue. Infection has a chain for effective transmission. This chain has six elements and all these elements are dependent on each other

for effective transmission and they are:

Infectious agent or microorganism- a microbe is able to cause severe disease base on its ability to enter the human tissue (invasive) and multiple (virulence). It should also have the ability to cause disease (pathogenicity)

Reservoir - a suitable environment for microbes to live and multiple examples: human or

animal tissue, inanimate materials such as door handles, water, table surface and so on.

Portal of exit – this is for the microbe to leave the reservoir such as mouth through saliva,

anus through feces, nose through sneezing, etc.

Mode of transmission – the method by which microbe is carried from one place to another

example hands health staff from patient to patient.

Portal of entry – this is the entry that permits the microbe to enter the host example mucous

membrane, open wound, orifices, needle stick, and instrument cut.

Host – the person who the microbe has succeeded to enter and multiple. This will result in disease if the person immune system is unable to fight it.

Infection is only possible if the chain remains intact and infection prevention and control can only be effective if this chain is broken.

2.6. Infection Prevention and Control

Infection prevention and control refers to steps or procedure adopted to avoid or reduce infections related to the healthcare setting. It is one of the basic requirements for quality healthcare since it reduces disease burden on patients, healthcare setting and the whole nation (MOH, 2015).

Over the years, there have been so many efforts to ensure a safe environment for efficient and effective healthcare delivery through the practice of infection prevention practice in healthcare settings. Some of these efforts led to the birth of guidelines, procedure manuals and other related training materials and programs in all aspect of our healthcare settings, but all these efforts yielded non-compliance result according to Institutional Care Division (ICD) on IPC in 2005 (MOH, 2015).

According to MOH (2015), Ghana had the first edition of national IPC policy in 2003 and IPC policy and Guidelines are built on recommendation from experts and professionals. Ghana infection prevention policy has the following principles: safety, client-centered care, cost-effectiveness, efficiency, teamwork, standardization and sustainability (MOH, 2015). Even though the practice of infection prevention and control is particular to healthcare facility level rather than at the society level, it is of public health importance in reducing disease and improving society productivity.

According to MOH (2015), standard precaution is the baseline for infection prevention and control and this is based on the assumption that all body fluids, blood, secretions, excretions (such as sweats), open skin and mucous membrane are sources for infection. Standard precautions are applied to all patients irrespective of the diagnosis. Standard precautions are for the protection of both the healthcare worker and the patient (Dix, 2012).

2.7 Patients Knowledge level on Nosocomial infection

Knowledge, according to Bano et al., (2013), knowledge is the ability to gain, keep in mind and use ideas; a combination of understanding, skill, judgement, and experience. Currently, the most important problem in the health system is an infection. Most morbidities and mortalities related to clinical, diagnostic and therapeutic procedures are related to infection and the solution to this is right knowledge, positive attitude and good compliance toward IPC (Alharbi et al., 2019).

According to Wesangula et al., (2016), the major knowledge gap in IPC is attributed to an inadequate comprehensive approach to IPC education.

It has been proven that, patient knowledge on hospital acquired infections is moderate and below satisfactory level (Ocran & Tagoe, 2014). Conversely, Miller and Farr, (2019), concluded that, a satisfactory level of patients know the risk factors of HAIs whiles others are also eager to know more to have more knowledge on nosocomial infections. This means a higher percentage of patients have adequate knowledge on HAIs.

Research has consistently highlighted the existence of significant knowledge gaps among patients when it comes to healthcare-associated infections (HAIs). Santos et al. (2015) and Raza et al. (2018) both found that patient knowledge of preventive measures was lacking, underscoring the need for educational interventions. In the current study conducted by Adams et al. (2022), similar trends emerged, indicating a generally low level of knowledge among

patients towards healthcare-associated infections (HAIs). Specifically, the study also revealed a generally low level of accurate comprehension among patients, emphasizing the need for improved patient education efforts. These findings raise significant concerns, primarily due to the notable gaps in understanding specific risk factors, modes of transmission, and preventive measures associated with Healthcare-Associated Infections (HAIs).

The study conducted by Yakob et al. (2015) underscores the pressing need for comprehensive educational campaigns that address these crucial aspects, particularly considering the moderate level of knowledge observed among patients. Furthermore, the cross-sectional investigation carried out by Singh et al. (2017) revealed a substantial lack of awareness among patients regarding Nosocomial Infections. These findings align with the conclusions drawn in the study by Lee and Kim (2019), emphasizing that a sound understanding of standard precautions can play a pivotal role in preventing transmission between patients.

Studies show that inadequate knowledge among patients and health workers is a major factor which correlates with an increased rate of nosocomial infection (AL-Rawajfah and Tubaishat, 2015; Cheung et al, 2015). A study conducted by Martinez et al. (2019) also shows there is limited knowledge base among patients on Nosocomial infection.

Limited knowledge level of patients posed them to HAI's since patients are exposed to pathogens and micro-organisms from various sources including cross-contamination, the healthcare environment and from other patients (Khan et al, 2017).

There exists a significant disparity in knowledge concerning nosocomial infection prevention between staff nurses and patients (Chacko et al., 2017). Moreover, research findings by Barchitta et al. (2012) indicate that over one-third of nosocomial infections can be attributed to patients' limited knowledge on the subject. Notably, inadequate awareness of standard hand hygiene practices, both among healthcare workers and patients in various healthcare units, has

been identified as a major contributing factor to the prevalence of Healthcare-Associated Infections (HAIs), as demonstrated in the study by Omiye et al. (2019).

Before one can prevent the spread and acquisition on nosocomial infection, this person should have knowledge on the transmission and spread of infectious agents in healthcare facilities would require the host, reservoir and the pathogen coming together. But from numerous researches it indicates clearly that most health workers have knowledge but patients have inadequate knowledge of nosocomial infection.

2.8 Non-conformity to hand-hygiene

According to Mathur (2011), the most efficient, easiest and least cost method of infection prevention in a healthcare setting is hand hygiene. Even though hand hygiene is a good way to prevention of infection in a healthcare setting, studies have shown that, on average, healthcare providers do hand hygiene half the number of times they are supposed to clean and this has contributed to nosocomial infections (CDC, 2017).

In a cross-sectional study conducted by Singh et al. (2017), findings indicated suboptimal compliance with preventive practices, notably hand hygiene and proper antimicrobial use, leading to potential healthcare-associated infection risks. These observations align with the study conducted by Chen et al. (2020), which highlighted inconsistencies in both patient and healthcare worker hand hygiene compliance, underlining the need for improved adherence to essential infection control measures.

CDC (2017), also found out that patient and health workers compliance to hand hygiene after instances such as; After touching patient bed rails, bedside table, remote control or phone; After touching doorknobs; After using the restroom; After blowing your nose, coughing, or sneezing; Before touching your eyes, nose or mouth; Before eating; Before and after changing bandages were very low.

From the WHO (2017), worldwide research, reported that most health workers do not adhere to recommended hand hygiene practices across the globe. Similarly, other studies also found out that the compliance of hand hygiene by patients and health worker has been very low in both developed and developing countries (WHO, 2009). In contrast, hand hygiene according to a study by Randle et al., (2014) says hand hygiene adherence has reportedly increase by nurses.

Multiple studies emphasize the significance of hand hygiene practices in healthcare settings. Chipungu et al. (2018) revealed low adherence to handwashing among healthcare providers in Zambian health facilities. In contrast, Bukhari et al. (2011) reported that nurses exhibited the highest overall hand hygiene compliance rate among healthcare professionals. Ocran and Tagoe (2014) study identified a low compliance level with hand hygiene practices among patients, underscoring the need for comprehensive strategies to improve hand hygiene across all healthcare stakeholders.

Engdaw, Gebrehiwot, and Andualem (2019) reported poor overall hand hygiene compliance among healthcare providers. Similarly, Mahfouz, El Gamal, and Al-Azraqi (2019) found low hand hygiene compliance among healthcare workers. Despite the recognition of appropriate hand hygiene as the most effective preventive strategy for infections, adherence among both patients and healthcare providers remains suboptimal (Madden et al., 2021). Additionally, Sunkesula et al. (2015) noted that the performance of hand hygiene was infrequent, highlighting the need for improved compliance in healthcare settings.

This study uncovered major differences in non-compliance with hand hygiene among healthcare workers and patients (El-Saed, Noushad, & Balkhy, 2015). Nurses, in particular, tended to adhere to hand hygiene less frequently, often citing high workloads as a contributing factor (Zhang, Kong, Lamb, & Wu, 2019). Furthermore, there was a lower compliance rate

observed in intensive care units compared to other wards (Tyagi, Hanson, Schellenberg, Chamarty, & Singh, 2018). Even with knowledge, some healthcare workers exhibited inadequate compliance and a false sense of security with alcohol-based rubs (Anargh, Singh, Kulkarni, Kotwal, & Mahen, 2013). Karaaslan et al. (2014) reported very low adherence to hand hygiene practice and the use of alcohol-based disinfectants. Poor hand hygiene compliance was also observed among both health workers and patients (Omiye et al., 2019).

Ataiyero, Dyson, and Graham (2019) noted poor hand hygiene compliance among healthcare workers during their research. Yawson and Hesse (2013) stressed the need for hand hygiene intervention programs, particularly in service centers, as care-related hand hygiene compliance among doctors and nurses in a large West African hospital was found to be low. However, their study in the neonatal intensive care unit (NICU), which had implemented hand hygiene interventions, reported better compliance.

Smith et al. (2016) also revealed low compliance with hand hygiene practices among healthcare workers, highlighting the ongoing challenges in promoting this critical infection prevention measure.In conclusion, even though most health worker knew hand hygiene was the best protective measure for nosocomial infection but were not complying to the protocol. Also most patient were lacking this knowledge which led to the non-conformity among them

2.9 Poor Personal hygiene contribution to HAI's

Availability of protective measures was better in teaching hospitals than non-teaching hospitals as were vaccination rates among staff (hepatitis B and tetanus/diphtheria). But studies have shown that physicians and nurses were less compliant with personal hygiene practices than cleaners (Askarian, Khalooeel & Nakhaee, 2006).

According to Allo, Mayouf and AL-Fattah (2020), the study demonstrated that there was negligence in some personal hygiene practices among nurses such as (hand washing, use protective e devices, use protective measures, and hepatitis B vaccination).

Personal hygiene plays a crucial role in the management of nosocomial infection at the hospital, a study have proven that, the practice of personal hygiene among nurses and patients is low(Allegranzi & Pittet , 2009).

A study conducted by Jayarajah et al. (2019) among medical students in clinical training revealed personal hygiene practices to be adequate as more than half of the respondents demonstrates good hygienic practices at the ward.

Khanna et al. (2020), also assessed the relationship between personal hygiene behavior and the occurrence of HAIs. and revealed that poor personal hygiene practices, including inadequate handwashing and improper hygiene-related behaviors, contribute to the occurrence and transmission of HAIs within healthcare facilities.

A study aimed to examine the association between poor personal hygiene and the incidence of surgical site infections (SSIs). The study demonstrated a significant correlation between inadequate personal hygiene practices and increased rates of SSIs, indicating that proper personal hygiene is essential in preventing SSIs (Kanjee et al., 2016).

According to Storr et al. (2017), the study found that, enhancing personal hygiene practices alongside environmental hygiene measures is essential in preventing the transmission, safeguarding patient safety, and reducing the burden of HAIs. Also, the findings from Lupi et al. (2022) emphasize the strong connection between gingival inflammation and poor oral hygiene practices. Therefore, poor oral hygiene practices was observed in this study.

According to Görig et al. (2019), once active involvement of patients and relatives is associated with improvements in adherence to infection prevention measures, it reduces the occurrence of nosocomial infections.

Transmission of infections and its severity can be prevented with good hygienic practices (Jayasinghe & Weerakoon, 2014). Also knowledge of oral health is a fundamental prerequisite for healthy behavior, which allows an individual to take measures to protect their own health. Farsi et al. (2020) have shown links between increased knowledge of oral health and better oral hygiene and health-related behaviors. The study found out that, there is low compliance rate among respondents towards proper oral hygiene practices.

A study by Ames (2020), reported keeping the body clean has positive effects on a person's social life and their physical and mental health and added that, personal hygiene is simply looking after the body and keeping it clean and healthy.

Yakob et al. (2015), highlighted the importance of adherence to personal hygiene practices by healthcare workers, such as proper hand hygiene, use of personal protective equipment, and adherence to aseptic techniques, to mitigate the risk of infections and protect patients, healthcare workers, and the environment he continued by stating that non-compliance with standard precautions can be a significant factor contributing to HAIs.

In a different perspective, Johnson et al. (2017), their study emphasized the significance of patient compliance with proper hand hygiene, following infection prevention protocols, and keeping personal areas clean. Non-conformity to these practices increased the risk of self-infection and transmission to others, leading to HAIs.

A research conducted to assessed the perspectives of healthcare workers on non-conformity to personal hygiene leading to HAIs , their findings revealed low conformity (Martinez et al., 2019).

Personal protective equipment's (PPEs) are coincided to be a form of personal hygiene, the research explored the impact of non-conformity to personal protective equipment (PPE) use among healthcare workers on the transmission of HAIs. This study emphasized that failure to properly utilize PPE, including gloves, masks, and gowns, could result in the transfer of pathogens and subsequent HAIs (Gomez et al., 2020).

Smithson et al. (2021), their research indicated that, lapses in cleaning protocols and inadequate disinfection of surfaces contributed to the transmission of pathogens and increased the likelihood of HAIs.

Finally, Johnson et al. (2022), study highlighted the trust patients place in healthcare providers to adhere to proper personal hygiene practices, emphasizing the need for healthcare workers to serve as role models by demonstrating and promoting good personal hygiene behavior.

In conclusion personal hygiene is need in the prevention of hospital acquired infection. Most research work above have indicated clearly that most healthcare workers and patients do not adhere to personal hygiene and hence leading to a rise in nosocomial infection.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter focused on the methodology that was used in the study. It dealt with the location of the study, target population, research design, sampling technique and size, data collection methods and instruments, data analysis techniques, ethical considerations, and limitations of the study, which aided in the validity of the research.

3.1 Study area

The study area is Holy Family Hospital Berekum, which is located in the Berekum municipality of the Bono Region in Ghana. The hospital is located in the heart of the town, near the Berekum Central Market, and it is easily accessible by road. Berekum Holy Family Hospital (HFH) is a Catholic Diocesan Hospital which serves as the Municipal Hospital. It is part of the Sunyani Diocesan Health Service (DHS) and the Diocesan Health Service Board (DHSB) serves as the Governing Board. It was established in 1948 by the Medical Mission Sisters (MMS) and became a Diocesan Hospital in 1978. HFH since 1969 has been Network with the Ministry of Health (MoH), a private hospital and community-based facilities and personnel and it is coordinated by the Municipal Health Management Team (MHMT). Holy Family Hospital is a catholic hospital which renders clinical services at a level that meets the requirement of training clinical medical and nursing students at the highest level of care in Ghana. The primary objective of the the facility is to provide quality healthcare to service personnel and the general public.

The hospital has 10 out-patient department and 7 inpatient departments (wards and emergency). It has a bed capacity of about 300 beds, estimated annual outpatient attendance of about 10,500

visits and an annual inpatient attendance of about 5,250. About 25% of the annual attendance are referral's from other facilities. The hospital provides numerous surgical and medical care as well as the Maternal and Child Health (MCH) popularly known as A.N.C making the Hospital a top notch in the Berekum Municipal district. Annually the hospital A.N.C records about 1,500 pregnancy cases.Which made it best to suit for this study. The ANC was established to provide regular check-ups that allow doctors to treat and prevent potential health problems throughout the course of the pregnancy and to promote healthy lifestyles that benefit both mother and child.

The Holy family Hospital is made up of several departments including Dental, Surgical, Medical, Gynaecology, Paediatrics, Obstetrics, Pathology, Pharmacy, Physiotherapy, Public Health and Radiology. It also has a training institutions such as the Nursing and Midwifery Training College (NMTC).

The hospital also provide services like Reproductive and Child Health (RCH) popularly known as C.W.C which is an extended maternal child health of family welfare or safe motherhood or child survival and safe motherhood programme. The Child Welfare Clinic of Berekum HFH monitors a child's health, development and growth, as well as provides parents with guidance and counselling. At the clinic, the child will receive vaccines compliant with the vaccination programme.

3.2 Study Population

According to Hulley et al., (2013), a study population is the entire set of individuals or items that have or share common attributes such as age, sex, or health condition of interest to the researcher. It is from the available study population that researchers pencil in their samples. Currently the hospital contained 36 medical officers, 22 physician assistants, 305 nurses, 51 nurses' assistants and 74 midwives. In total the hospital has 488 healthcare professional at the

various department at the hospital (Annual population census of healthcare staff HFH, 2022). A current census done on 5th August, 2023 indicated a sum of fifty-seven in-patient available a the various ward for the study (Daily census HFH, 2023). The study targeted all healthcare staff and patients at the various wards, but the accessible population of the study was all healthcare staff who were on duty and patients currently admitted at the various medical and surgical wards during the day of the study at Berekum Holy Family Hospital.

3.3 Study design

The study adopted a facility-based descriptive cross-sectional study. This helped the researchers gain a snapshot view of the population at a particular point in time by examining the characteristics of respondents and their associated factors. This approach was also more time and cost-efficient than longitudinal studies. Data were collected from healthcare workers and patients at HFH, Berekum. A quantitative method approach was employed for data collection in the study, as the researchers utilized statistical analysis to reveal data. This promoted objectivity and impartiality in the research process. The researcher collected basic characteristics, including socio-demographic data, patients' knowledge on HAIs, nurses' compliance level with HH leading to HAIs, and patients' compliance level with personal hygiene leading to HAIs.

3.4 Sampling technique and size

According to Denscombe (2014), sampling is the method of selecting a segment of the population to stand for the entire population of interest, so that by studying the sample, for probability sampling the researchers may fairly generalize the results of the study back to the population from which they were selected.

Stratified random sampling method was used to divide the study population into strata's according to their profession and simple random sampling used to select respondents from each stratum proportionally to their population. Stratified random sampling (stratification) is used to divide the study population into smaller homogenous groups for an equal chance for the participation of each group. This is known as a quota or proportional random sampling (Hayes, 2019). Simple random sampling will be use to recruit thirty (30) members from the in-patient category of the study participants.

Simple random sampling is the method of ensuring an unbiased presentation of study sample by randomly selecting from the study population whereby each member has an equal opportunity of participation (Hayes, 2019). This sampling method allowed for equal opportunity and chance for all categories of healthcare providers to participate in the study. The study population was stratified into professional groups (Doctors, Nurses, Midwives and Nurses' assistant) and simple random sampling was used to proportionally select six (6) participants from each stratum. On the contrary this sampling method can be time-consuming and resource-intensive compared to non-probability sampling methods. In total fifty-four participants was recruited for the study, 30 representing patients and 24 representing healthcare staffs.

3.5 Data collection methods and instruments

A self-administered close-ended structured questionnaire was used to collect data from the study group. The questionnaire was distributed to various wards at the hospital to select participants who were present during the day of the study. The questionnaire was divided into four sections: demography, knowledge of HAIs by patients, compliance level with HH by healthcare workers, and compliance level with personal hygiene by patients. The demographic characteristics included questions such as the sex of the respondent, age, marital status,

education level, occupational category, and years of experience (for healthcare workers) in the current occupation.

The second section of the questionnaire, which measured the knowledge level of patients on HAIs, contained eleven questions guided by the World Health Organization (WHO) and Ghana guidelines for Infection Prevention and Control (IPC).

The third section of the questionnaire measured healthcare workers' compliance level with hand hygiene. It contained nine questions adopted from the Centers for Disease Control and Prevention (CDC, 2017) regarding the various instances that require hand hygiene in healthcare settings for infection control.

The fourth section of the questionnaire measured patient compliance level with personal hygiene. It contained twenty-one questions adopted from the CDC, WHO, and the Ministry of Health (MOH) Ghana guidelines on infection control.

Observational checklists were also used, including one to observe the availability of hand hygiene materials and healthcare workers' compliance with hand hygiene practices. The study questionnaires were piloted to identify areas that needed correction in order to make necessary changes before data collection in the study area. Corrections were made based on the pilot testing before administering the questionnaire in the study area. The researchers allocated one week to collect the data from the participants.

3.6 Data analysis techniques

The collected quantitative data were cleaned, coded, and entered into Microsoft Excel. The data were entered into Microsoft Excel 2019 edition and imported into STATA version 17 for analysis. The data were analyzed using descriptive and inferential statistics. Frequency distribution tables, bar charts, and pie charts were used to descriptively analyze the data. The

knowledge level of patients on HAIs, healthcare workers' compliance level on hand hygiene, and the compliance level of patients towards personal hygiene were the independent variables, while HAIs were the dependent variable.

3.7 Ethical Clearance

Ethical clearance was obtained from the management of Holy Family Hospital Berekum for this study before data collection commenced. The respondents/participants were assured of confidentiality and privacy throughout the study. Each respondent's consent was also sought before the research started, with explanations given to them before they accepted to participate. Additionally, respondents were made aware of their rights to withdraw from the study at any time as they wished. They were assured that no physical, psychological, or emotional harm would be inflicted upon them. They were also made aware that no material benefit would be given to them for taking part in the study.

3.8 Limitations of the Study

There was a limited time schedule for the research work to be carried out. Funding for the research was limited, making it not possible to use a large sample size. Some participants were reluctant to spend time answering the questions. Another limitation was the reliance on internet sources for information. Additionally, collecting the questionnaires after distribution presented logistical challenges on its own.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

4.0 Introduction

This chapter analyzes data collected from the field of study and the results. The reporting format includes written, tabular, and graphical representations. Out of 54 surveys issued, 54 respondents returned completed questionnaires, showing a 0% non-response rate. As a result, the representation of this survey was 100% based on the number of respondents who took part. The primary components that emerged from these results include socio-demographic characteristics, patient knowledge levels regarding HAIs, Healthcare workers compliance level on hand hygiene, and personal hygiene practices among patients- providing frequencies and proportions for specific research objectives.

4.1 Demographical distribution of respondents

4.1.1 Demographical distribution of patients

Regarding to Sex of respondents, 36.7% of the respondents are male, while 63.3% are female. The female-male ratio among patients in the sample is approximately 1.65:1.

With respect to to Age of respondents, 13.3% of the respondents are below 18 years old, 20.0% of the respondents fall in the age range of 18-30, 26.7% of the respondents belong to the age range of 31-45 and 40.0% of the respondents are between the ages of 46-50. The sample consists of a significant proportion of patients between the ages of 46-50.

Concerning Marital status, 30.0% of the respondents are single, while 40.0% are married, 13.3% of the respondents are cohabiting, 3.4% are divorced, and 13.3% are widowed. There is a diverse range of marital statuses among the patients.

Considering the Educational level of respondents, 23.3% of the respondents have a primary educational level, 43.4% of the respondents have a secondary educational level and 33.3% of the respondents have a tertiary educational level. The majority of patients have at least a secondary education.

In the context of Occupational category, 30.0% of the respondents are government workers, 40.0% of the respondents work in the private sector and 30.0% of the respondents are entrepreneurs. Patients come from various occupational categories, with a balanced distribution among government workers, private workers, and entrepreneurs.

The demographical distribution are represented among the patients as shown in table 4.1, figure 4.1 and figure 4.2 below.

Table 4.1: Demographical distribution of Patients

Variables	**Frequency**	**Percentage**
Sex of respondents		
Male	11	36.7
Female	19	63.3
Total	**30**	**100%**
Age of respondents		
Below 18	4	13.3
18-30	6	20.0
31-45	8	26.7
46-50	12	40.0
Total	**30**	**100%**
Marital Status		
Single	9	30.0
Married	12	40.0
Cohabiting	4	13.3
Divorce	1	3.4
Widow	4	13.3
Total	**30**	**100%**
Educational level		
Primary	7	23.3
Secondary	13	43.4
Tertiary	10	33.3

Total	**30**	**100%**
Occupational Category		
Government worker	9	30.0
Private worker	12	40.0
Enterpreneur	9	30.0
Total	**30**	**100%**

Source: Field study (2023)

Figure 4.1: sex of patients

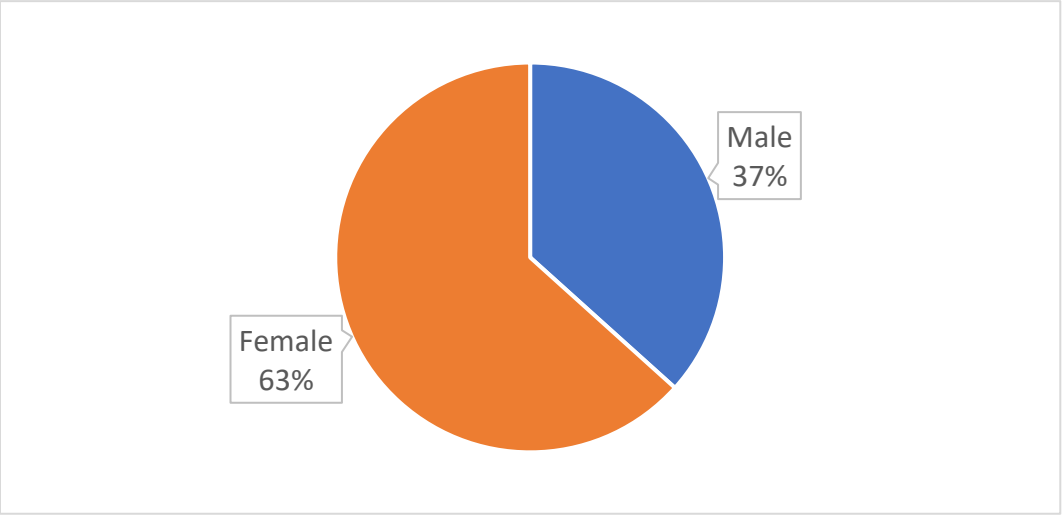
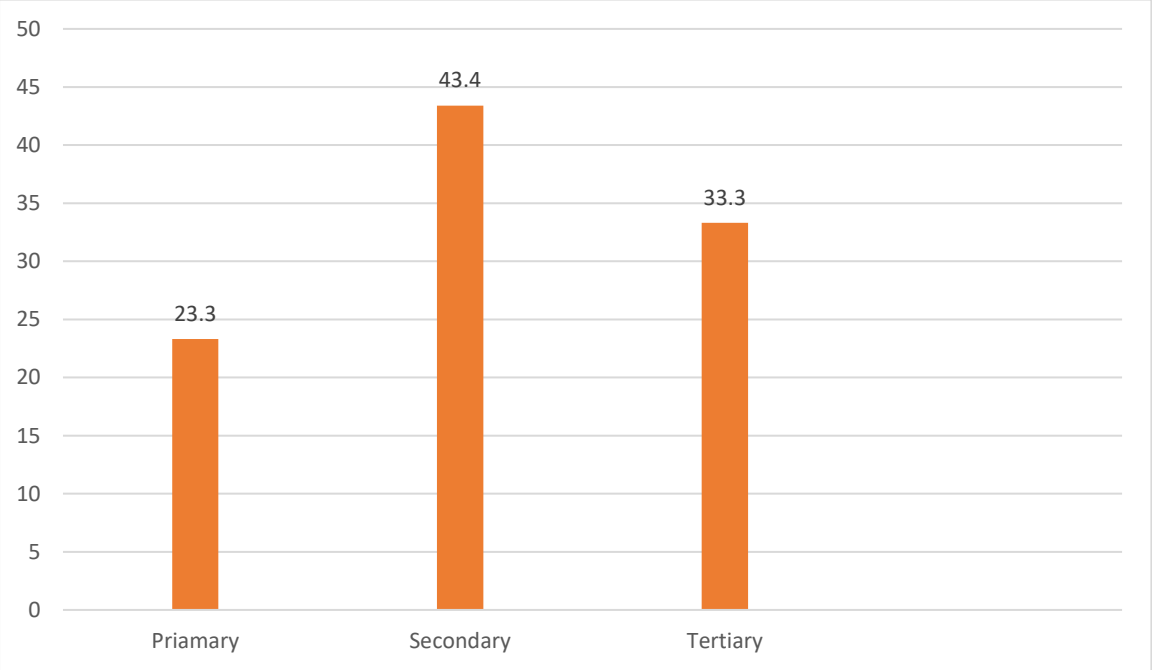


Figure 4.2: Educational category of patients



4.1.2 Demographical distribution of Healthcare professionals

With respect to Sex of respondents, 54.2% of the respondents are male, while 45.8% are female. The male-female ratio among healthcare professionals in the sample is 1.18:1.

With respect to Age of respondents, 62.5% of the respondents fall in the age range of 18-30, indicating a younger workforce. 29.2% of the respondents belong to the age range of 31-45, representing a relatively smaller portion. Only 8.3% of the respondents are between the ages of 46-50, indicating a lower representation in that age category.

With respect to Marital status, 45.8% of the respondents are single, while 54.2% are married. There is a relatively balanced distribution between single and married healthcare professionals.

With respect to Health category, 25% among all the four healthcare categories including Doctors, Nurses, Midwives and Nurses Assistants'

With respect to Year of clinical experience, 41.7% of the respondents have 0-2 years of clinical experience, indicating a significant proportion of early-career professionals. Another 41.7% of the respondents fall in the experience range of 3-5 years. Only 16.6% of the respondents have more than 6 years of clinical experience.

The demographical distribution are represented among the Healthcare professionals as shown in table 4.2, figure 4.3, figure 4.4 and figure 4.5 below**.**

Table 4.2: Demographical distribution of Healthcare professionals

Variables	Frequency	Percentage
Sex of respondents		
Male	13	54.2
Female	11	45.8
Total	**24**	**100%**
Age of respondents		
18-30	15	62.5
31-45	7	29.2
46-50	2	8.3
Total	**24**	**100%**
Marital Status		
Single	11	45.8
Married	13	54.2
Total	**24**	**100%**
Health Category		
Nurses	6	25.0
Doctors	6	25.0
Midwives	6	25.0
Nurses Assistants	6	25.0
Total	**24**	**100%**
Year of Clinical Experience		
0-2 Years	10	41.7
3-5 Years	10	41.7
≥ 6 Years	4	16.6
Total	**24**	**100%**

Source: Field study (2023).

Figure 4.3: Sex of respondents

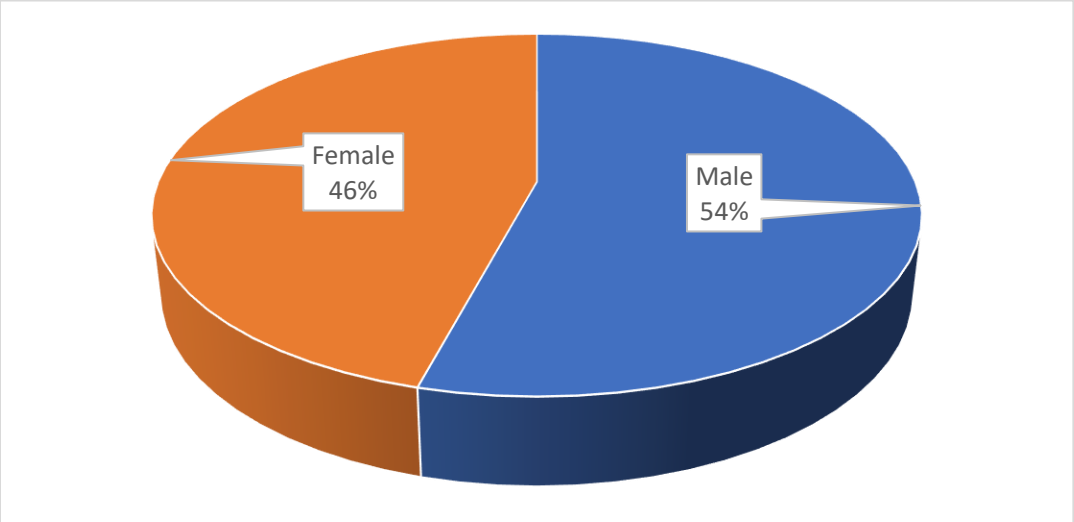


Figure 4.4: Health Category

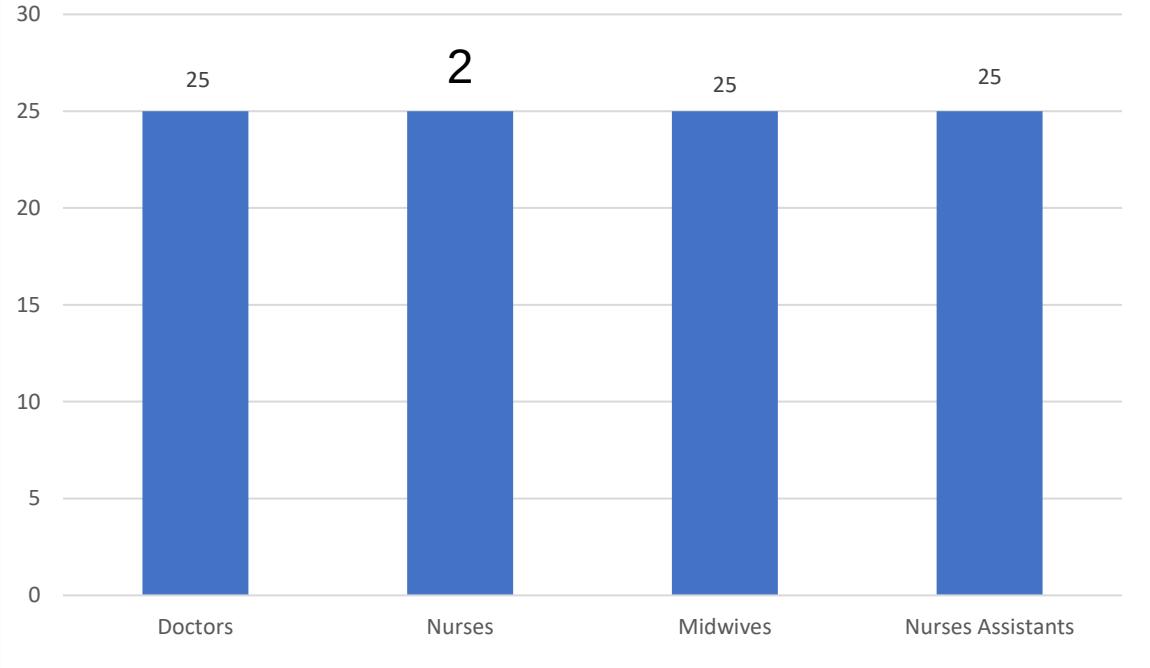
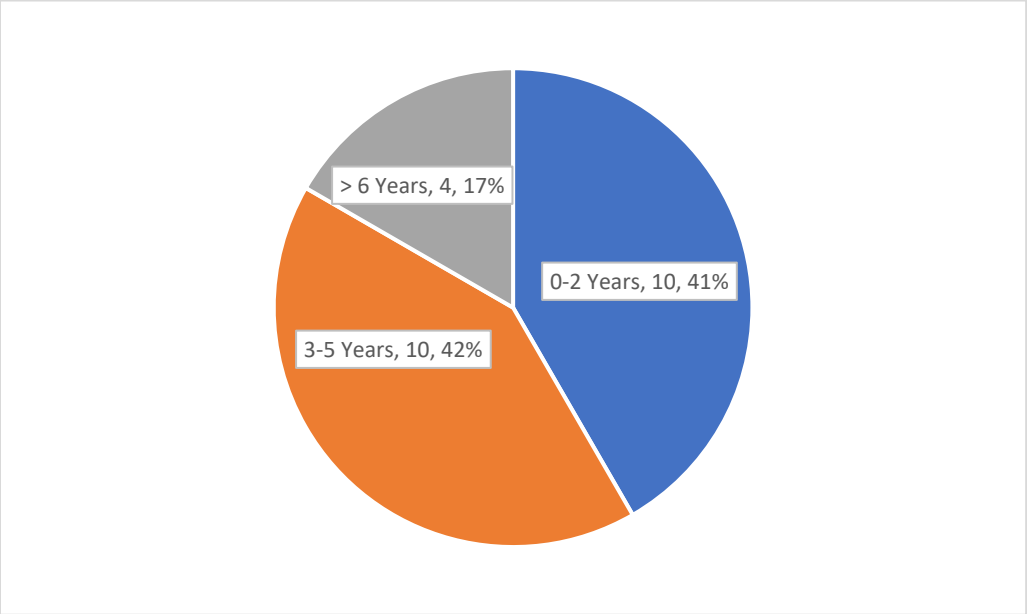


Figure 4.5: Year of Clinical Experience



4.2 Knowledge level of patient on HAI's

With respect to Transmission via Medical Equipment: A significant majority of respondents (90.0%), recognized that HAIs can be transmitted through medical equipment.

With respect to Understanding Nosocomial Infections: Knowledge regarding nosocomial infections was limited, with only 33.3% of respondents understanding the concept of HAI's whiles it was vice versa for the majority.

With respect to Storage of Instruments: Nearly half of the respondents (46.7%) were aware that certain instruments can be stored in antiseptic solutions for up to 36 hours.

With respect to Patients with Communicable Diseases being admitted to the same ward with other patients: Approximately 43.4% of respondents, identified that admitting patients with communicable diseases to the same ward with other patients can contribute to disease transmission.

With respect to Micro-organisms and Clean Water: A majority (56.7%) of respondents understood that micro-organisms are not destroyed by clean water.

According to Application of Standard Precautions: An encouraging 80.0% of respondents recognized the importance of applying standard precautions to all patients, irrespective of their diagnosis.

With respect to Familiarity with HAI Guidelines: Sixty percent (60.0%) of respondents indicated that they were familiar with hospital-acquired infection guidelines.

With respect to All Staff and Patients as Potentially Infectious: A significant majority (73.3%) identified that all staff and patients should be considered potentially infectious.

With respect to Handling Body Fluids: A notable 60.0% of respondents knew that nurses should not handle body fluids with bare hands, especially if gloves are unavailable.

With respect to Needle Recapping: Unfortunately, only 16.7% of respondents understood that used needles should not be recapped after use before disposal.

With respect to Types of HAIs: The majority (83.3%) of respondents identified surgical site infections (SSI), bloodstream infections, urinary tract infections, and respiratory tract infections as types of HAIs.

Based on table 4.3 provided below, the variables with higher percentages of "correct" responses indicate a better level of knowledge on those specific topics. If we consider the average knowledge level across all the variables, which is approximately 58.5%, we can conclude that the overall knowledge level of the respondents towards HAIs is somehow below a satisfactory level. However, it is important to note that specific areas have a higher or lower knowledge level based on the given data.

Table 4.3: Knowledge level of patient on HAI's

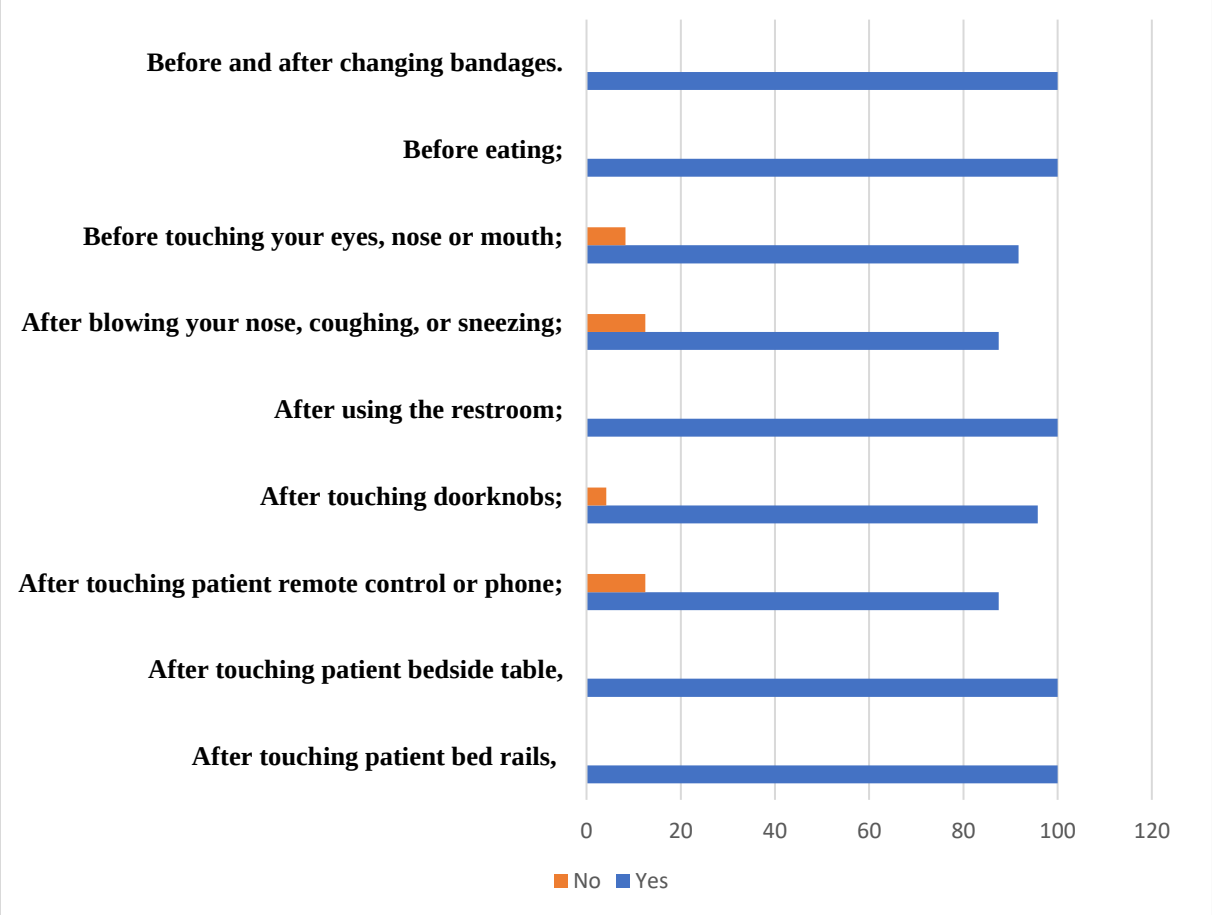
	VIARABLE – KNOWLEDGE	True		False		Not Applicable	
		Freq	%	Freq	%	Freq	%
1	Hospital acquired infections (HAI's) can be transmitted by medical equipment such as syringes, needles, catheters, stethoscope, thermometers, etc.	**27**	90.0	**2**	6.7	**1**	3.3
2	Nosocomial infection is an infection that the patient brings from the house to the hospital	**17**	56.7	**10**	33.3	**3**	10.0
3	Some instruments can be stored in an antiseptic solution for up to 36 hours	**13**	43.3	**14**	46.7	**3**	10.0
4	If there are limited beds available, patients with communicable disease may be admitted in the same ward with other patients	**16**	53.3	**13**	43.4	**1**	3.3
5	Micro-organisms are destroyed by using clean water.	**12**	40.0	**17**	56.7	**1**	3.3
6	Standard precautions should be apply to all Patients regardless of their diagnosis.	**24**	80.0	**5**	16.7	**1**	3.3
7	I am familiar with hospital acquired infection guidelines.	**18**	60.0	**11**	36.7	**1**	3.3
8	All staff and patient should be Considered potentially infectious.	**22**	73.3	**7**	23.4	**1**	3.3
9	The nurse can handle body fluids with bare hands if gloves are not available.	**10**	33.3	**18**	60.0	**2**	6.7
10	Used needles by the nurse can be recapped after use and before disposal	**20**	66.6	**5**	16.7	**5**	16.7
11	All these are types of HAI's; SSI, bloodstream infection, the urinary tract infections and respiratory tract infections	**25**	83.3	**5**	16.7	**0**	0.0

Source: Field study (2023). Freq: Frequency, %: Percentage, True +False +Not applicable=30 (100%)

4.3 Compliance Level On Hand Hygiene by Healthcare workers.

Healthcare workers compliance level on average (95.8%) was excellent as all the variables elapsed 100% for the "True" response except four variables which had a minute fraction of "False" response such as Before touching your eyes, nose and mouth, After blowing your nose, coughing, or sneezing, After touching doorknobs and After touching patient remote control or phone, which were 87.5%, 95.8%, 87.5% and 91.7% respectively as shown in figure 4.5 below..

Figure 4.6: Compliance Level On Hand Hygiene by Healthcare workers.



4.4 Compliance Level of Patients On Personal Hygiene

4.4.1 Hand Hygiene

This study analyzed the compliance level of respondents regarding hand hygiene practices. The results indicated that only 26.7% of the respondents consistently washed their hands before eating, while 40% washed them occasionally. Similarly, 36.7% of the respondents consistently practiced hand hygiene after using the toilet, while 40% did so frequently. When it came to washing hands upon returning from outside, 36.7% reported frequent handwashing, while 30% occasionally washed their hands. Additionally, 50% of the respondents sometimes used soap and water for handwashing, and 43.4% sometimes utilized alcohol-based hand rubs. Also, 46.7% of the respondents sometimes cut their finger nails weekly. Averagely the hand hygiene practices among patients at the ward was 67.5%, indicating moderate compliance level. These findings highlight the need for improved compliance with hand hygiene practices, emphasizing consistent and proper handwashing procedures to minimize the risk of infection transmission.

4.4.2 Body Hygiene

This study assessed the compliance level of respondents regarding body hygiene practices. The findings revealed that 46.7% of the respondents consistently washed their face after waking up, while 23.3% did so occasionally. Furthermore, 41.9% of the respondents always changed their clothes after taking a bath, and 35.5% frequently changed their clothes thereafter. In terms of bed linen, 50% reported frequently changing it when dirty. However, 40% of the respondents occasionally repeated the clothes they wore. Good hygiene practices were observed regarding underclothes, as 50% always changed them daily. Bathing habits were also notable, with 40% of the respondents frequently taking baths twice a day. Hair hygiene practices exhibited some variability, as 33.3% occasionally used shampoo and conditioner. Additionally, 40% of the respondents sometimes applied pomade after bathing, while 43.3% frequently used

deodorant/body spray for grooming purposes. Averagely, the body hygiene practices among patients at the ward were reported to be at 72.5%. This percentage indicates a moderately high compliance level with body hygiene practices. Patients demonstrated a satisfactory adherence to various aspects of body hygiene, including changing clothes, changing underclothes, and taking baths. However, there is room for improvement in certain areas, such as consistently washing the face after waking up and changing bed linen when dirty. By addressing these specific areas and promoting continuous education on body hygiene practices, it is possible to further enhance overall compliance levels and ensure better patient well-being and hygiene outcomes within the ward.

4.4.3 Oral Hygiene

This study examined the compliance level of respondents regarding oral hygiene practices. The results revealed that 36.7% of the respondents consistently performed mouthwash in the morning, while 33.3% occasionally engaged in this practice. Regarding controlling mouth odour, 36.7% of the respondents occasionally rinsed their mouth with plain water. Toothpick usage was reported by 40% of the respondents as an alternative to dental floss. In terms of nighttime oral hygiene, 40% of the respondents sometimes forgot to brush their teeth. Similarly, 40% of the respondents occasionally spent two minutes brushing their teeth. Notably, 43.3% of the respondents reported dental issues only when they experienced toothaches. These findings underscore the need for greater adherence to consistent oral hygiene practices, particularly in areas where occasional compliance was observed. Promoting regular mouthwash, emphasizing comprehensive oral hygiene routines, and educating individuals on the importance of proactive dental care can contribute to improved oral health outcomes. Averagely, the oral hygiene practices among patients at the ward were reported to be at 65% compliance level. This suggests a moderate level of adherence to recommended oral hygiene

routines and protocols among the patient population. While there is room for improvement, it is encouraging to see that a significant portion of patients are actively engaged in maintaining their oral health during their stay at the ward.

Overall, the compliance level of patient towards personal hygiene were reported to be at 67.5% base on the analysis, indicating moderate compliance level of patient towards personal hygiene during their stay at the ward. This shows that while there is some level of compliance with personal hygiene practices, there are areas where improvement is needed. For example, hand hygiene practices are often inconsistent, with a significant percentage not washing hands before eating or after using the toilet. However, the majority frequently use soap or hand rubs for hand hygiene. Body hygiene practices like frequent changing of clothes and underclothes are generally followed, but there is room for improvement in practices like changing bed linen and using pomade or deodorants. In terms of oral hygiene, there are areas of concern, such as forgetting to brush teeth at night and not reporting dental issues unless there is toothache. However, many respondents do practice mouthwash, rinsing, and brushing their teeth. To improve overall compliance with personal hygiene, education and awareness programs could focus on promoting consistent hand hygiene, emphasizing the importance of regular bathing, changing clothes, and oral hygiene practices. Additionally, encouraging regular dental check-ups and emphasizing the significance of reporting dental issues preemptively can help improve oral hygiene habits among the patients**.**

Table 4.4: Compliance Level of Patients On Personal Hygiene

Statement	Never		Sometimes		Frequently		Always	
	Freq	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**
HAND HYGIENE								
1. I wash my hands before eating	**0**	0.0	**12**	40.0	**10**	33.3	**8**	26.7
2. I wash my hands after using the toilet	**0**	0.0	**7**	23.3	**12**	40.0	**11**	36.7
3. I wash my hands as soon as I get back from outside	**2**	6.6	**8**	26.7	**9**	30.0	**11**	36.7
4. I use soap and water to wash my hands	**1**	3.4	**15**	50.0	**7**	23.3	**7**	23.3
5. I routinely use an alcohol base hand rub for my hand hygiene	**7**	23.3	**13**	43.4	**7**	**23.3**	**3**	10.0
6. I cut my nails weekly	**2**	6.6	**14**	46.7	**11**	36.7	**3**	10.0
BODY HYGIENE								
1. I wash my face after waking up	**1**	3.3	**7**	23.3	**8**	26.7	**14**	46.7
2. I change by clothes after a bath	**1**	3.2	**6**	19.4	**11**	35.5	**13**	41.9
3. I change my bed linen when dirty	**0**	0.0	**8**	26.7	**15**	50.0	**7**	23.3
4. I don't mind repeating the clothes I wore	**3**	10.0	**12**	40.0	**7**	23.3	**8**	26.7
5. I change my underclothes everyday	**0**	0.0	**7**	23.3	**8**	26.7	**15**	50.0
6. I take my bath twice daily	**1**	3.3	**12**	40.0	**8**	26.7	**9**	30.0
7. I wash my hair with shampoo and conditioner	**9**	30.0	**10**	33.3	**7**	23.3	**4**	13.4
8. I apply pomade to myself after bath	**0**	0.0	**12**	40.0	**8**	26.7	**10**	33.3
9. I used deodorant/body spray to groom myself after bath	**1**	3.3	**8**	26.7	**8**	26.7	**13**	43.3
ORAL HYGIENE								
1. I only do mouth wash in the morning	**2**	6.7	**10**	33.3	**7**	23.3	**11**	36.7
2. I regularly rinse plain water to control mouth odour	**8**	26.7	**11**	36.7	**4**	13.3	**7**	23.3
3. I use toothpick rather than dental floss	**3**	10.0	**12**	40.0	**9**	30.0	**6**	20.0
4. I tend to forget brushing my teeth at night	**2**	6.7	**12**	40.0	**10**	33.3	**6**	20.0
5. It takes me two minutes to brush my teeth	**3**	10.0	**12**	40.0	**8**	26.7	**7**	23.3
6. I only report dental issues when I have toothache	**3**	10.0	**13**	43.3	**6**	20.0	8	26.7

Source: Field study, (2023)

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This section encompasses the discourse, conclusion and recommendation of the principal discoveries previously delineated in chapter four. The discussions rely on the investigation's findings juxtaposed with pre-existing studies and theories, elucidating possible rationales for both similarities and dissimilarities between them. These deliberations regarding Hospital acquired infections (HAIs) serve as the foundation for this chapter's ultimate conclusions and recommendations.

5.1 Discussion

5.1.1 Demographical distribution of respondents

The demographical distribution of patients in the analyzed sample indicates a predominantly female population. The age distribution suggests a significant proportion of patients in the middle-aged category (31-50 years old). A diverse range of marital statuses, educational levels, and occupational categories are represented among the patients.

The demographical distribution of healthcare professionals in the sample reveals a predominance of younger individuals, particularly in the age range of 18-30. Male professionals slightly outnumber female professionals. There is a relatively even distribution between single and married professionals. In terms of clinical experience, there is a significant proportion of early-career professionals, with a relatively smaller portion having more extensive experience.

5.1.2 Knowledge level of patient on HAI's

The findings regarding knowledge of hospital-acquired infections (HAIs) among the respondents provide insights into their understanding of critical healthcare topics. Overall, the survey indicates a moderate level of knowledge among the respondents regarding HAIs, with an average knowledge level of approximately 58.5%.

One positive aspect is that a majority of respondents correctly identified that HAIs can be transmitted by medical equipment (90.0%) and that standard precautions should be applied to all patients regardless of their diagnosis (80.0%). These results demonstrate a reasonable understanding of the importance of infection control measures in healthcare settings.

However, there are areas where knowledge appears to be lacking. For example, a significant percentage of respondents (56.7%) believed that micro-organisms are destroyed by using clean water, which is not the case. Additionally, a considerable proportion of respondents thought that used needles by the nurse can be recapped after use and before disposal (66.6%), which is a potentially dangerous practice.

The study also identifies an alarming issue among participants as a substantial percentage of respondents did not correctly identify nosocomial infections (infections acquired in the hospital) (56.7%) and the possibility of patients with communicable diseases being admitted to the same ward as other patients (53.3%). These aspects are crucial for understanding the risk and spread of infections within healthcare facilities.

The average knowledge level 58.5%, is below a satisfactory level. While there are areas where respondents demonstrated a reasonable understanding of infection control practices, such as the recognition of HAIs being transmitted by medical equipment and the importance of applying standard precautions to all patients, there are significant gaps in knowledge in other critical areas.

The fact that a substantial proportion of respondents had misconceptions about topics like the destruction of micro-organisms by clean water and the recapping of used needles is a cause for concern. Additionally, the lack of understanding regarding nosocomial infections and the potential admission of patients with communicable diseases to the same ward highlights the need for targeted education and awareness campaigns. As a result, the findings suggest that a patient's lack of understanding of HAIs may be a contributing factor to HAIs. The findings in this study was higher than the studies conducted by Ocran and Tagoe (2014), Adams et al. (2022) and Santos et al. (2015) who revealed patients knowledge level to be at 53.8%, 30% and 40% respectively but lower than the study conducted by Miller and Farr (2019) who figured out 62% knowledge level of its respondents (patients).

5.1.3 Compliance Level On Hand Hygiene by Healthcare workers.

Healthcare workers generally displayed excellent compliance with hand hygiene protocols, with an impressive average compliance rate of 95.8%. Almost all variables received a 100% "True" response, indicating strong adherence to hand hygiene practices. However, there were a few minor deviations from full compliance, notably in scenarios like touching the eyes, nose, and mouth, coughing or sneezing, touching doorknobs, and using patient remote controls or phones. These scenarios had slightly lower compliance rates below 100%, ranging from 87.5% to 95.8%. While overall compliance was commendable, addressing these specific areas with lower compliance rates through education and improved accessibility to hand hygiene resources can further strengthen infection prevention efforts in healthcare settings. The findings in this present study have exempted healthcare professionals regarding non-conformity to hand hygiene practices contributing to HAIs. The results obtained in this current study collides with the study conducted worldwide by WHO (2017), who reported that, up to 70% of health workers do not adhere to recommended hand hygiene practices across the globe, proving

compliance rate to be at 30%. The results obtained was also higher than the study conducted by Bukhari (2011), who revealed an overall compliance rate to be 50.3%.

5.1.4 Compliance Level of Patients On Personal Hygiene

5.1.4.1 Hand hygiene

The study examined respondents' hand hygiene practices and found several areas for improvement. A minority consistently washed their hands before eating and after using the toilet, with most opting for occasional handwashing. Handwashing upon returning from outside also lacked consistency. Additionally, only half of the respondents sometimes used soap and water, and a significant portion sometimes used alcohol-based hand rubs. Weekly nail cutting, which aids hand hygiene, was not consistent among respondents. The average hand hygiene compliance among patients was moderate, at 67.5%. This indicates significant percentage of respondents adhere to proper hand hygiene practices. These findings highlight the need for education and awareness campaigns, better access to handwashing facilities and sanitizers, and reinforcement of proper hand hygiene practices to reduce the risk of infections in healthcare settings. This study contradicted the findings of Ocran and Tagoe (2014), who found that patients had a 46.2% compliance rate with hand washing. Also this study fail to support the current study as it found out that a majority of hospitalized patients were aware of the importance of hand hygiene, but observations indicated that performance of hand hygiene was uncommon (Sunkesula et al., 2015).

5.1.4.2 Body Hygiene

The study examined respondents' body hygiene practices and found generally positive compliance levels in several aspects. A significant portion consistently washed their faces after waking up, changed clothes after taking a bath, changed bed linen when dirty, and changed

underclothes daily. Many respondents frequently took baths twice a day and used deodorant/body spray for grooming purposes. Overall, the average body hygiene compliance among patients in the ward was moderately high, at 72.5%. These findings indicate that patients generally maintain satisfactory body hygiene practices. However, there are opportunities for improvement, particularly in consistently washing the face after waking up and consistently changing bed linen when it becomes dirty. Educational initiatives and reinforcement of these practices can contribute to further enhancing body hygiene compliance among patients. This findings contrasted with Khanna et al. (2020) and Storr et al. (2017), who revealed poor body hygiene-related behaviors among patients.

5.1.4.3 Oral Hygiene

The study evaluated the compliance level of respondents regarding their oral hygiene practices. The findings indicate that there is room for improvement in several aspects of oral hygiene among the respondents. While a substantial portion consistently performed morning mouthwash and rinsed their mouths with plain water occasionally, there is a need to encourage more regular and comprehensive oral hygiene routines. Notably, some respondents reported forgetting to brush their teeth at night, occasionally spending insufficient time brushing, and only addressing dental issues when they experience toothaches. These findings emphasize the importance of promoting consistent oral hygiene practices among patients, including regular and thorough toothbrushing, dental floss usage, and proactive dental care. On average, the compliance level for oral hygiene practices among patients in the ward was reported at 65%, indicating a moderate level of adherence to recommended oral hygiene routines and protocols. Educational initiatives and reminders can be beneficial in reinforcing the importance of regular oral hygiene practices for maintaining good oral health. This findings however conflicted with

the study by Lupi et al. (2022) and Farsi et al. (2020) who found out poor oral hygiene compliance among their respondents.

Therefore patient compliance with personal hygiene practices at wards of Berekum, HFH revealed a moderate overall compliance level of 67.5%. Meaning the compliance level of patients towards personal hygiene practices is adequate. While certain aspects of body hygiene, such as changing clothes and underwear regularly, demonstrated good adherence, other areas require improvement. Hand hygiene practices were inconsistent, emphasizing the need for better education and reinforcement. Patients generally used soap or hand sanitizers for hand cleanliness. Oral hygiene practices, including forgetting to brush teeth at night and only reporting dental problems when experiencing toothaches, highlighted areas for intervention. As many patients used mouthwash and engaged in tooth brushing exercise should also be encouraged. The current study findings are consistent with and slightly higher than those of Jayarajah et al. (2019), who discovered that personal hygiene behaviors among medical students in clinical training were at 61.7%. The findings of this study were contradicted by the findings of the following studies: Johnson (2016) reported that 24% of patients demonstrated satisfactory personal hygiene practices during their hospital stay, and Smith (2020) longitudinal analysis study conducted discovered that, personal hygiene practices among hospitalized patients improved by 15% over the course of their stay. Also, according to Kanjee et al. (2016), promoting and ensuring proper personal hygiene practices among, patients can help reduce the incidence of HAIs and improve patient outcomes which supported the findings of this present study. In addition Storr et al. (2017), highlighted that, personal hygiene measures is essential in preventing the transmission of infections, safeguarding patient safety, and reducing the burden of HAIs.

5.2 Conclusion

It can be concluded that, the knowledge level of respondent towards HAIs is below satisfactory level although the value of their practices was 58.5%, since knowledge regarding HAIs is a crucial point in the filed of infection prevention control at the ward. In addition healthcare professional demonstrated excellent and massive adherence performance towards hand hygiene as their adherence level was recorded to be at 95.8%. Furthermore, overall personal hygiene practices among patients were recorded to be adequate (67.5%) even though we underscored certain variables that needs to be improved. Finally, based on the study's findings, healthcare professionals are not being held accountable or implicated as a significant cause of HAIs as a results of non-adherence to hand hygiene protocols. The study's results suggest that other factors such as patients knowledge level and personal hygiene practices at the ward may be more responsible for the problem of the causes of HAIs.

5.3 Recommendations

1. Efforts should be made to improve awareness and knowledge among patients about HAIs, especially by healthcare professionals who play a pivotal role in preventing and controlling infections within healthcare settings.

2. Continuing education and training programs, as well as regular updates on infection control guidelines, are essential to bridge the knowledge gaps identified in this study and enhance patient safety.

3. Healthcare providers and staff should continue to emphasize the importance of oral hygiene and provide education and support to further enhance compliance and overall oral health outcomes among patients.

4. Regular monitoring and feedback mechanisms can also be implemented to track progress and identify areas for targeted interventions.

5. Patient belongings should be cross check during the admission process to make sure all the tool and materials required for personal hygiene practices are available.

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APPENDIX

QUESTIONNAIRE

Dear respondent,

We are final year students from the Holy Family Nursing and Midwifery Training College, Berekum, conducting a research to identify the factors that contributes to nosocomial infections among patients at the ward, a study at HFH, Berekum. It is for academic purpose and your identity will not be disclosed so please be at ease and co-operate by giving us your best and honest opinion. Please tick [√] or write as appropriate.

1. Demographical characteristics of;

A. Patients

1. Sex Of Respondent, A) male [ ] B) female [ ]

2. Age [ ]

3. Marital Status, A) Single [ ] B) Married [ ] C) Cahabiting [ ]

4. Education Level, A) Tertiary [ ] B) Secondary [ ] D)Primary [ ]

5. Occupational Category, A) Government worker B) Private worker C)Entrepreneur

B. Healthcare workers

1. Sex Of Respondent, A) male [ ] B) female [ ]

2. Age [ ]

3. Marital Status, A) Single [ ] B) Married [ ] C) Cahabiting [ ]

4. Healthcare category, A) Nurses [ ] B) Doctors [ ]

5. Years Of Clinical Experience A) 0-2years [ ] B) 3-5years [ ] C) 6years and above [ ]

2. Knowledge level of patient on HAI's

Guided by World Health Organization (WHO) and Ghana guidelines for IPC

VIARABLE – KNOWLEDGE	**True (1)**	**False (2)**	**Not Applicable (3)**
Hospital acquired infections (HAI's) can be transmitted by medical equipment such as syringes, needles, catheters, stethoscope, thermometers, etc.			
Nosocomial infection is an infection that the patient brings from the house to the hospital			
Some instruments can be stored in an antiseptic solution for up to 36 hours			
If there are limited beds available, patients with communicable disease may be admitted in the same ward with other patients			
Micro-organisms are destroyed by using clean water.			
Standard precautions should be apply to all Patients regardless of their diagnosis.			
I am familiar with hospital acquired infection guidelines.			
All staff and patient should be Considered potentially infectious.			
The nurse can handle body fluids with bare hands if gloves are not available.			

Used needles by the nurse can be recapped after use and before disposal			
All these are types of HAI's; SSI, bloodstream infection, the urinary tract infections and respiratory tract infections			

3. Compliance Level On Hand Hygiene by Healthcare workers.

According to the CDC (2017), the various instances require hand hygiene in the Healthcare setting.

When do you usually do hand hygiene?	**Yes (1)**	**No (2)**
After touching patient bed rails,		
After touching patient bedside table,		
After touching patient remote control or phone;		
After touching doorknobs;		
After using the restroom;		
After blowing your nose, coughing, or sneezing;		
Before touching your eyes, nose or mouth;		
Before eating;		
Before and after changing bandages.		

4. Compliance Level of Patients On Personal Hygiene

Statement	Never	Sometimes	Frequently	Always
A. HAND HYGIENE				
1. I wash my hands before eating				
2. I wash my hands after using the toilet				
3. I wash my hands as soon as I get back from outside				
4. I use soap and water to wash my hands				
5. I routinely use an alcohol base hand rub for my hand hygiene				
6. I cut my nails weekly				
B. BODY HYGIENE				
1. I wash my face after waking up				
2. I change by clothes after a bath				
3. I change my bed linen when dirty				
4. I don't mind repeating the clothes I wore				
5. I change my underclothes everyday				
6. I take my bath twice daily				
7. I wash my hair with shampoo and conditioner				
8. I apply pomade to myself after bath				
9. I used deodorant/body spray to groom myself after bath				
C. ORAL HYGIENE				
1. I only do mouth wash in the morning				
2. I regularly rinse plain water to control mouth odour				
3. I use toothpick rather than dental floss				
4. I tend to forget brushing my teeth at night				

5. It takes me two minutes to brush my teeth				
6. I only report dental issues when I have toothache				

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Our Ref. HFNMTC/GC/011/081623

Your Ref. .....

Date August 16, 2023

The Nursing Administrator
Holy Family Hospital
P.O. Box 21
Berekum

Dear Nursing Administrator

PERMISSION TO CONDUCT RESEARCH

I wish to introduce to you the under listed names of final year students of the College:

1. **Arthur Aaron Kofi**
2. **Asamoah Charity**

As part of the pre-requisite for the award of Diploma in Nursing they are to conduct a research study, on the topic '**Identify the Factors that contributes to Nosocomial Infections among patients at the ward; a study at Holy Family Hospital, Berekum.**'

I would be grateful if you could assist them with any material or help they may need to accomplish this task.

Thank you.

Yours sincerely

.....
Samuel Osafo Asare
Supervisor

For: Principal

Website: nmtcberekum.edu.gh **E-mail.** nmtcberekum@yahoo.com, nmtcberekum@gmail.com