

**ASSESSMENT OF AWARENESS AND COMPLIANCE TO INFECTION  
PREVENTION AND CONTROL AMONG HEALTH CARE PROFESSIONALS AT  
UBTH, BENIN CITY, EDO STATE**

**BY**

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**UNIVERSITY OF BENIN, BENIN CITY,**

**EDO STATE.**

**OCTOBER, 2025.**

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**EDO STATE.**

**IN PARTIAL FULFILLMENT OF THE AWARD OF THE DEGREE OF “BACHELOR  
OF NURSING SCIENCES”, UNIVERSITY OF BENIN, BENIN CITY.**

**OCTOBER, 2025.**

## DECLARATION

This is to declare that this research project titled "**ASSESSMENT OF AWARENESS AND COMPLIANCE TO INFECTION PREVENTION AND CONTROL AMONG HEALTH CARE PROFESSIONALS AT UBTH, BENIN CITY, EDO STATE**" was carried out by **ENOBAKHARE OSADEBAMWEN**. It is solely the result of my work excerpt were acknowledged as being derived from other person(s) or resources.

EXAMINATION NUMBER:     **BMS1907044**    

DEPARTMENT/SCHOOL: NURSING SCIENCE, SCHOOL OF BASIC MEDICAL SCIENCES, UNIVERSITY OF BENIN, BENIN CITY.

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## CERTIFICATION

This is to certify that this research project by **ENOBAKHARE OSADEBAMWEN** with **EXAMINATION NUMBER** BMS1907044 has been examined and approved for the award of "Registered Nurse Certificate."

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Date: \_\_\_\_\_

*(External Examiner)*

## **DEDICATION**

I dedicate this project work to God Almighty, whose unwavering guidance, strength, and grace have been my constant companions throughout this academic journey.

With deep love and gratitude, I also dedicate it to my cherished family members: The late Chief. John Enobakhare, Mrs. Omoremi Enobakhare, Mrs. Osoyenwen, Mr. Osasumen, Mrs. Idehen, Mrs. Abiodun, Mr. Osarugue, Mr. Efosa, and Mr. Osaretin.

Your unwavering support, prayers, and encouragement have been the foundation of my success.

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## ABSTRACT

This study was a descriptive cross-sectional survey conducted to assess the level of awareness and compliance with Infection Prevention and Control (IPC) measures among healthcare professionals at the University of Benin Teaching Hospital (UBTH), Benin City, Edo State, Nigeria. A stratified random sampling technique was used to ensure representation across various professional categories, and a total of 300 participants were selected. Of these, 298 correctly filled and returned the questionnaires, yielding a high response rate of 99.3%. Data were collected using a structured questionnaire and analyzed with the Statistical Package for the Social Sciences (SPSS) version 26.0. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the results. Findings revealed that 76.5% of respondents demonstrated a good level of awareness of IPC practices. The overall mean score for awareness was 1.8, above the threshold cut-off of 1.5, indicating adequate knowledge among healthcare professionals about critical IPC measures such as hand hygiene, proper use of personal protective equipment (PPE), and safe handling of sharps. Regarding compliance, 82.1% of participants reported adhering consistently to IPC protocols. The grand mean score for compliance was 3.6, exceeding the cut-off point of 2.5, signifying a high level of practical application of IPC guidelines. The highest levels of compliance were reported in the use of PPE (87.2%) and proper waste disposal (84.6%). The study concluded that healthcare professionals at UBTH exhibit a high level of awareness and compliance with IPC measures. Nonetheless, the findings also indicate areas where consistency in practice could be improved, particularly in low-resource settings within the facility. It is recommended that regular in-service training, continuous monitoring, and institutional support be provided to maintain and enhance IPC standards. This approach will help foster a culture of safety and reduce the risk of healthcare-associated infections.

**Keywords:** assessment, awareness, compliance, infection, health care professionals

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## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of study

A key component of safe healthcare delivery is infection prevention and control (IPC) strategies, which reduce the risk of healthcare-associated infections (HAIs) for patients, healthcare professionals (HCPs), and the general public. Both high-income and low-and-middle-income (LMIC) nations have acknowledged the significance of IPC, and international health organizations have called for more robust policies to lower morbidity, mortality, and medical expenses related to avoidable infections (World Health Organization [WHO], 2021). HAIs nonetheless represent a substantial public health burden in spite of these initiatives, particularly in LMICs where health systems are frequently overburdened, underfunded, and vulnerable (Maki & Zervos, 2021). The necessity of strong IPC procedures in all hospital settings was brought home by the COVID-19 epidemic. IPC violations during the pandemic increased the strain on already overburdened health systems and contributed to the transmission of the SARS-CoV-2 virus within medical institutions (Greaves et al., 2023; Tomczyk et al., 2021).

Incorporating multidisciplinary collaboration into IPC programs has also been emphasized in recent literature. Effective IPC requires coordination among various cadres of healthcare providers, including doctors, nurses, laboratory staff, cleaners, and administrative personnel

(Alqahtani et al., 2022). Strengthening teamwork and communication within healthcare institutions is therefore vital to ensuring a unified approach to infection prevention.

The role of healthcare waste management in IPC cannot be overstated. Improper waste disposal practices increase the risk of pathogen transmission within healthcare facilities and the surrounding environment (Aziz et al., 2022). Studies have shown that many healthcare professionals lack sufficient training in waste segregation, disposal, and recycling protocols, thus highlighting another critical area for intervention (Ezeudu et al., 2022). In Nigeria, while there are national IPC guidelines aligned with international standards, implementation at the institutional level remains inconsistent. Research conducted by Ochie et al. (2022) indicated that many healthcare professionals in Nigerian tertiary hospitals had inadequate knowledge of IPC principles, and even fewer demonstrated consistent compliance in practice. Factors identified as barriers included lack of institutional enforcement, limited availability of resources, poor training, and attitudinal factors such as risk perception and complacency.

Although attempts have been made to improve IPC procedures at UBTH, anecdotal information and scant published data indicate that there are still major gaps, especially in the areas of safe waste management, PPE usage, environmental cleaning, and adherence to hand hygiene guidelines (Kouko, 2023). Since UBTH is a tertiary healthcare facility and a referral center for numerous Nigerian states, it is especially important that the institution's IPC procedures be strengthened. IPC violations could have a significant impact on patient outcomes, healthcare worker safety, and general public health if they are not addressed. By investing in IPC infrastructure, encouraging leadership commitment, improving training, and encouraging a safety culture among healthcare staff, healthcare systems can increase resilience, according to the WHO's most recent Global Report on Infection Prevention and Control (2023a). Healthcare facilities run the danger of ongoing HAI outbreaks, rising antibiotic resistance, and worsened health disparities if they don't make a concerted effort to raise awareness and encourage adherence to IPC measures (WHO, 2023b). Therefore, it is essential to evaluate the degree of knowledge and adherence to IPC procedures among UBTH's medical staff. It will offer the empirical data required to direct training programs, institutional policy changes, and infrastructure upgrades meant to improve the standard of healthcare service and safeguard the public's health. Furthermore, recognizing the discrepancies between awareness and practice can help with the development of focused treatments that are adapted to the unique requirements and difficulties faced by the UBTH healthcare workforce.

## **1.2 Statement of problem**

Practices for infection prevention and control (IPC) are crucial for protecting healthcare workers (HCPs) and patients from infections linked to healthcare (HAIs). The University of Benin Teaching Hospital (UBTH) and other healthcare facilities have set IPC norms, although compliance is still below ideal. Studies have repeatedly shown that patient safety and healthcare worker wellbeing are still at risk due to IPC adherence violations, such as irregular hand hygiene practices, inappropriate use of personal protective equipment (PPE), and insufficient waste management (Chakma et al., 2024; Tomczyk et al., 2021). A serious problem that has to be looked into is the apparent discrepancy between UBTH healthcare workers' IPC knowledge and practice, which is highlighted by this ongoing departure from established standards. Around the world, hundreds of millions of patients are impacted by HAIs each year, making them a serious public health risk (World Health Organization [WHO], 2021). Systemic healthcare issues, such as limited resources, insufficient training, and weak institutional support systems, significantly increase the burden in low- and middle-income countries (LMICs) (Aziz et al., 2022). According to anecdotal reports and scant research, complete compliance is still elusive in Nigeria, especially in tertiary institutions like UBTH, even though IPC policies are in place (Ogboghodo et al., 2021; Igwe et al., 2024). High patient-to-staff ratios, a lack of training, complacency, and restricted access to sanitary supplies are some of the factors that lead to these deficiencies. Furthermore, recent outbreaks of infectious diseases including Lassa fever, Ebola, and COVID-19 have highlighted how important it is to have strong IPC procedures (Smallwood et al., 2022). However, in the absence of constant adherence, healthcare environments continue to be susceptible to avoidable infections and occupational risks.

A wide range of healthcare professionals, including doctors, nurses, laboratory workers, and auxiliary staff, are impacted by the widespread IPC non-compliance at UBTH. Due to its large patient base and status as a major referral facility in southern Nigeria, UBTH increases the chances of IPC lapses. According to national and international research, adherence to fundamental IPC protocols, like hand hygiene, can range from 20% to 40% in comparable contexts (WHO, 2023a; WHO, 2023b). The risk of HAIs on hospital grounds is further increased by inadequate attention to environmental hygiene, proper PPE use, and medical waste management (Chakma et al., 2024). The fact that these compliance gaps are so pervasive points to a systemic problem that could affect not just the hospital but also the larger population it serves. There are serious and wide-ranging repercussions when IPC compliance is not sufficiently addressed. Non-compliance raises the risk of infections for patients while they are in the hospital, which can lead to longer hospital stays, higher rates of morbidity and mortality, and higher medical expenses (Tomczyk et al., 2021). Healthcare workers are more likely to be exposed to infectious diseases at work, which can lead to absenteeism, illness, or psychological discomfort, which can reduce the workforce (Smallwood et al., 2022). Additionally, poor IPC procedures contribute to the proliferation of organisms resistant to antibiotics, which is a serious risk to public health in general (WHO, 2021). These issues could worsen the burden on already scarce health resources and erode public trust in the healthcare system if they are not resolved.

Although healthcare personnel are generally aware of IPC practices, research has shown that awareness and practice differ (Aziz et al., 2022). There is a dearth of thorough data precisely analyzing the awareness and actual compliance levels among various healthcare professional groups in the context of UBTH. Additionally, prior research has frequently concentrated on discrete IPC components, like hand hygiene, without conducting a comprehensive examination of other crucial areas including the usage of personal protective equipment (PPE), waste management, environmental hygiene, and administrative support systems (Ogboghodo et al., 2021; Chakma et al., 2024). Furthermore, not much research has evaluated the institutional impediments to compliance, including company culture, training opportunities, and resource availability. The creation of focused treatments meant to enhance IPC practices is hampered by the lack of such comprehensive, context-specific research. By evaluating the degree of awareness and adherence to IPC measures among medical staff at the University of Benin Teaching Hospital, this study aims to close the reported knowledge gap. The project intends to produce actionable evidence that can guide the creation of focused training programs, improve resource allocation, and fortify institutional IPC frameworks by methodically examining healthcare professionals' knowledge, behaviors, and perceived obstacles to IPC adherence. In the end, the study aims to improve the general standard of patient care at UBTH, encourage healthcare worker safety, and help lower the number of HAIs.

### **1.3 Objective of the study**

The general objective of the study is to assess the awareness and compliance of infection

prevention and control (IPC) among healthcare professionals at the University of Benin Teaching Hospital (UBTH) in Benin City, Edo State, Nigeria.

The specific objectives of the study are:

1. To assess the level of awareness of infection prevention and control (IPC) among healthcare professionals at UBTH.
2. To evaluate the level of compliance to infection prevention and control (IPC) among healthcare professionals at UBTH.
3. To assess the challenges experienced by healthcare professionals in adhering to infection prevention and control (IPC) at UBTH.

#### **1.4 Research questions**

1. What is the level of awareness of infection prevention and control (IPC) among healthcare professionals at UBTH?
2. What is the level of compliance to infection prevention and control (IPC) among healthcare professionals at UBTH?
3. What are the challenges experienced by healthcare professionals in adhering to infection prevention and control (IPC) at UBTH?

#### **1.5 Research hypothesis**

1. There is no significant relationship between the level of awareness and level of compliance to infection prevention and control (IPC) among healthcare professionals at UBTH.

## **1.6 Significance of the Study**

### **To the Nursing Profession**

As frontline healthcare providers, nurses will get more understanding about infection prevention and control (IPC) procedures thanks to this study. It will draw attention to awareness and compliance gaps and offer proof to support nursing education and ongoing professional development initiatives. Through the identification of obstacles to efficient IPC procedures, this study will equip nurses with the information and abilities needed to safeguard both themselves and their patients, hence enhancing patient safety and clinical results.

### **To Healthcare Providers**

The results will provide important information about the efficacy of the University of Benin Teaching Hospital's existing IPC methods for healthcare providers in general. It will assist administrators and legislators in creating focused interventions, regulations, and educational materials to increase adherence to infection control standards. The prevalence of healthcare-associated infections (HAIs) will decline with improved IPC practices among healthcare workers, improving patient trust and lowering hospital stays and expenses.

### **To the Society**

Because hospital infection prevention has a direct impact on public health, this study is important to society. The risk of infectious disease transmission to patients, guests, and the general public can be considerably decreased by increasing IPC compliance among medical personnel. Additionally, a healthy populace translates into higher production, better societal well-being, and lower financial costs from illnesses. The study encourages a safer healthcare setting, which increases public trust in medical facilities.

### **1.7 Scope of study**

The purpose of this study was to evaluate the University of Benin Teaching Hospital's healthcare staff's knowledge of and adherence to infection prevention and control (IPC). It included physiotherapists, doctors, nurses, radiologists, and medical laboratory scientists who worked at different UBTH departments and units.

### **1.8 Operational definition of terms**

**Infection Prevention and Control (IPC):** The standard practices and measures implemented by healthcare professionals to prevent and reduce the spread of infections within healthcare settings.

**Healthcare-Associated Infections (HAIs):** Infections acquired by patients during their stay in a healthcare facility that were not present at the time of admission.

**Healthcare Professionals (HCPs):** All personnel involved in patient care and hospital operations, including doctors, nurses, radiographers, physiotherapists at UBTH.

**Knowledge of IPC:** The level of awareness and understanding healthcare professionals have about IPC principles, guidelines, and best practices.

**Compliance with IPC Measures:** The extent to which healthcare professionals consistently follow recommended IPC protocols in their daily clinical activities.

**Challenges in IPC Adherence:** The difficulties healthcare professionals face in implementing IPC measures, including lack of resources, high workload, or inadequate training.

**UBTH:** University of Benin Teaching Hospital, situated in Ugbowo, Benin City, is a multi-specialty healthcare institution in West Africa. It was founded on May 12, 1973, through Edict No. 12 under the Nigerian National Health Act and later came under the control of the Federal Government on April 1, 1975.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

This chapter focuses on the review of related literature under the following headings; conceptual review, theoretical review and empirical review. Necessary literature would be gotten from published and unpublished works, articles and journals in this study.

## **2.1 Conceptual Review**

### **2.1.1 Overview of Infection Prevention and Control (IPC)**

Infection Prevention and Control (IPC) is a comprehensive collection of strategies and policies designed specifically to prevent the spread of infections, particularly in hospitals. These practices stem from a commitment to evidence-based policies aimed at reducing the spread of infectious diseases for patients, caregivers, and the public (Costa et al., 2021). The World Health Organization (WHO) (2023) states that IPC is a practical and scientific approach aimed at reducing the burden of healthcare-associated infections (HAIs) through systematic hygiene and environmental control. The principle of IPC is to safeguard the health of patients while creating a safe work environment for health workers. IPC is interventional and includes a wide range of infection control measures to manage infections caused by bacteria, viruses, fungi, and parasites (WHO, 2021). These measures include hand hygiene, sterilization of surgical instruments, the use of PPE, environmental sanitation, patient isolation, and vaccination. For example, hand hygiene is the most important IPC practice and is advocated for as the most effective method of preventing the spread of infectious agents in healthcare settings.

Infection control (IPC) integrated with other strategies (e.g. use of PPE and surface cleaning) can significantly reduce risk (Morris and Murray, 2021).

IPC is not limited to individual patient care, but encompasses the management of health care establishments and public health activities. It is vital in controlling the outbreaks of TB, COVID-19, and influenza, all of which pose significant risk in clinical environments. Measures of IPC are critical to the protection not only of patients who are immunocompromised but also of healthcare workers who are frontline defenders against constantly communicable to infectious diseases. Without proper IPC in place, the health care system loses control of outbreaks and exposes patients to unnecessary suffering, death, and costs to the healthcare system (Andrew, 2024).

Healthcare-associated infections (HAIs) are significant public health threats globally and are responsible for millions of illnesses and deaths every year. The World Health Organisation (WHO) states that approximately 7% of patients in high-income countries and 15% of patients in low- and middle-income countries receive at least one HAI during their hospital stay (WHO, 2023). These infections frequently lead to more complex complications, higher costs of care, and increased risk of death. The impact of HAIs is most pronounced in under-resourced settings, where there is inadequate healthcare infrastructure, a shortage of personnel, and the absence of basic supplies, such as PPE and antiseptics (Maki and Zervos, 2021).

Challenges in the implementation of effective IPC measures in Nigeria are indicative of greater systemic challenges in the healthcare system. Although the Federal Ministry of Health implemented National IPC Standards, some healthcare facilities, particularly tertiary institutions such as the University of Benin Teaching Hospital (UBTH), continue to show inconsistent compliance (Ogboghodo et al., 2021). The gaps in the world's healthcare systems' preparation to handle an outbreak of an infectious disease highlighted during the COVID-19 pandemic, further emphasized the need for IPC. The pandemic also reinforced the need for healthcare workers to adhere strictly to IPC measures in order to prevent cross-infection of patients and themselves. Moreover, inadequate access to PPE, hand sanitizers, and training on IPC measures, in lower-resource settings, was a substantial challenge. The pandemic reinforced the need for sustained IPC resource investment, training, and maintenance monitoring to achieve sustainable change in infection control procedures (Tomczyk et al., 2021).

There are several important elements that healthcare organizations ought to prioritize to successfully meet the goals set out by the WHO Infection Prevention and Control (IPC) Framework. These elements involve the creation of: (1) a well-structured and institutionally supported IPC program, (2) the training and education of personnel on a continuous basis, (3) the provision of appropriate IPC supplies and PPE, (4) the maintenance of interprofessional relationships, and (5) the oversight and enforcement of IPC procedures (WHO, 2023). These elements are all anchored on one principle provision: the coherence of all components in the system.

Equally important to the performance of the whole integration system are the training and the continuous education of all healthcare personnel in an institution. The healthcare workforce must be constantly educated to keep pace with evolving infections, updated IPC( Infection Prevention Control) practices, and the legislation. There is a notable body of literature indicating that training in the IPC area results in better practice adherence and compliance (Zhang et al., 2024). For example, a study conducted in the sub-Saharan Africa region of the world reported that hospitals with extensive IPC training programs in place had a significantly lower burden of HAIs than those without (Igwe et al., 2024). There is ample evidence that supports the need to strengthen the education component in IPC as part the fundamental training for doctors and nurses, and as post qualifying education.

### **2.1.2 Knowledge of Infection Prevention and Control Among Healthcare Professionals.**

Infection prevention and control (IPC) relates to the core components of the healthcare delivery system. It reduces healthcare-associated infections (HAIs) and protects patients and healthcare personnel. The knowledge of IPC by healthcare professionals (HCPs) affects their adherence to prevention strategies necessary to control the spread of communicable diseases (Alhumaid et al., 2021). Determining the IPC knowledge level and the scope within which it operates will provide information on how to strengthen the control of infections within a given healthcare facility.

IPC knowledge includes all aspects of standard and transmission-based precautions control, hand hygiene, the use of personal protective equipment (PPE), environmental cleaning and waste disposal (Andrew, 2024). These health care workers, which include physicians, nurses, and other allied health personnel, need to understand and perform these measures to reduce the HAI burden both on the patients and themselves. In Alqwahtani et al. (2022) study, IPC knowledge is part the multidisciplinary strategies necessary to control infections within a healthcare facility. Despite its relevance, many studies indicate that a significant proportion of the health care workers (HCW) have poorly developed IPC knowledge which to a large extent, contributes to their nonconformity to stipulated outlined standards (Alhumaid et al., 2021).

The understanding of IPC protocols hinges on numerous determinants, of which education and training have been singled out as the most important. Professional training devoted to the improvement of skills and knowledge has been recognized as one of the most important facilitators to the adherence to IPC protocols (Aika & Enato, 2022). Without IPC training during the professional development cycles, HCWs may have outdated knowledge on the evolving strategies concerning control of new infections. Moreover, the culture of the workplace and institutional backing are fundamental to shaping HCWs' comprehension and the performance of IPC activities. Evidence indicates that institutions with effective leadership in infection control are more likely to have higher staff levels of knowledge regarding IPC and compliance (Assiri et al., 2021).

The availability of materials and other resource constitutes yet another limiting factor to the understanding of IPC. Hospitals which operate with shortages of PPE, disinfectants, and appropriate waste disposal systems likely lead to decreased adherence to the IPC guidelines (Aziz et al., 2022). Additionally, heavy workloads and tight schedules may impair healthcare workers from consistently applying the adequate IPC strategies. In healthcare systems with high stress levels, health professional are likely to lose focus on the control of infections and prioritize immediate patient care which promotes the incidence of HAIs (Adams et al., 2021).

The implications of HCWs not having adequate training in IPC are substantial. Weak infection control poses the risk of increasing healthcare-associated infections, longer patient hospitalizations, and greater hospital and treatment costs (Andrew, 2024). Lack of adequate infection prevention and control (IPC) knowledge can also endanger the safety of HCWs and result in occupational exposure to communicable diseases (Alqahtani et al., 2022).

Ineffective IPC knowledge and practice can, at a system level, erode the general public's confidence in the healthcare system. In system constrained environments, where the healthcare system is already stretched, ineffective IPC can worsen outbreaks and escalate the burden of care on the system (Aika & Enato, 2022). Therefore, the problem underscores the importance of continuous education on IPC, the need for institutional commitment, and policies that support HCWs to reinforce compliance (Assiri et al., 2021).

### **2.1.3 Importance of Knowledge of IPC Among Healthcare Professionals.**

Healthcare personnel have direct interactions with patients, perform in-depth medical procedures, and work with surfaces and tools that might be contaminated with pathogens, putting them at permanent risk of acquiring infectious diseases. Hospital personnel knowledgeable and well trained in Infection Prevention and Control (IPC) can help stop the initiation and the transmission of healthcare associated infections (Alqahtani et al., 2022). Health care associated infections, in particular, are detrimental to the health care system and affect patient safety since infections, such as blood stream infections, pneumonia, surgical site infections, and urinary tract infections, are associated with prolonged hospitalizations and increased health care costs (Kamble, 2020). Poor knowledge of IPC can lead to unnecessary infections that extend the recovery time, render the patient more difficult to treat, and, in extreme cases, result in death (Alqahtani et al., 2022). Alhumaid et al. (2021) demonstrated that the incidence of surgical site infections was much higher in hospitals with minimally trained personnel compared to hospitals with trained personnel.

Healthcare workers are at higher risk of coming into close contact with infectious diseases like tuberculosis, hepatitis, and more recently, COVID-19, as they perform their day-to-day duties. Awareness of IPC procedures helps them understand and follow protocols that minimize risk of exposure (Alhumaid et al., 2021). Infection risk can be mitigated through proper use of PPE like gloves, masks and gowns, as recommended by infection prevention and control (IPC) guidelines. Still, without proper training and exposure to infection control guidelines as mentioned by (Draper, 2022), healthcare workers are still at risk of self-contaminating and putting their peers at risk through unknowing transmission.

Cost implications within low- and middle- income countries can make the situation of limited resources much worse. Knowing and well-implemented IPC guidelines can help resource limited healthcare workers reduce the impact of healthcare associated infections (HAIs). This, in turn, helps reduce financial burdens on healthcare facilities and patients. Improved IPC knowledge also benefits the employees as it reduces the frequency of worker sick days (Kouko, 2023).

Regarding the competence of the World Health Organization and other global organizations, the Nigeria Government as well put professionally crafted Infection Prevention and Control (IPC) policies regarding the country as well as policies regarding the world. The health awareness of the health care personnel regarding these policies and standards as well as (where applicable) adherence to the policies standards and procedures is pivotal to the realization of the goals associated with these policies and standards, as well as accreditation (Price, 2022). The uneven adherence to standards and policies set out in the policies is due mainly to lack of awareness which is in turn the direct fault of health care policy education and which will result in the lack of uniformity in the country for infection prevention (Price, 2022).

Regarding the individual health facility, the lack of awareness of health personnel regarding the policies and of course the standards is to the nation as a whole. The risk the infection is a direct result of the lack of control and policies set in the health facility for the policies set for the control of infectious diseases in a health facility (Burton et al., 2023). These policies establish a direct border between community and health care practices, and of course the implications on public health (Burton et al., 2023).

#### **2.1.4 Components of IPC Practices**

Infection Prevention and Control (IPC) procedures represent a comprehensive collection of measures meant to prevent the spread of infections in healthcare environments. These procedures attempt to safeguard patients, healthcare staff, and the society at large by reducing the spread of infectious pathogens.

#### **Hand Hygiene**

Hand hygiene is commonly acknowledged as the cornerstone of IPC procedures. It includes the cleaning of hands to eliminate or destroy bacteria, hence minimising the danger of transferring infections. The relevance of hand hygiene arises from the fact that healthcare personnel routinely use their hands to conduct clinical duties, making them a main vehicle for disease transmission.

Healthcare personnel are encouraged to undertake hand hygiene using two basic methods: washing with soap and water or using an alcohol-based hand rub (ABHR) (Kramer et al., 2022). The WHO's "Five Moments for Hand Hygiene" describes important times when hand hygiene must be performed:

- Before touching a patient.

- Before undertaking aseptic operations.
- After exposure to body fluids.
- After touching a patient.
- After contact with patient settings (Diefenbacher et al., 2022).

Studies have indicated that adherence to adequate hand hygiene may lower HAIs by up to 50%. However, challenges such as time limits, lack of resources, and insufficient expertise among healthcare personnel sometimes hamper compliance. Healthcare institutions must provide the availability of hand hygiene materials, such as sinks, soap, ABHR, and paper towels. Also, instructional programs, audits, and feedback systems may promote compliance among healthcare professionals (Donati et al., 2020).

### **Personal Protective Equipment (PPE)**

Personal Protective Equipment (PPE) acts as a barrier between healthcare personnel and infectious pathogens, safeguarding both the user and those they deal with. PPE comprises gloves, masks, gowns, goggles, face shields, and respirators, each having a distinct role in infection prevention (Verbeek et al., 2020).

The optimal selection of PPE depends on the kind of operation, the amount of risk, and the route of disease transmission. For example, gloves are worn for direct contact with blood or body fluids, whereas masks and respirators are used for operations that create aerosols. Proper donning and doffing practices are crucial to prevent contamination during PPE usage (Park, 2020).

In resource-limited environments, PPE shortages constitute a substantial impediment to

compliance. During the COVID-19 pandemic, several healthcare institutions encountered acute PPE shortages, exposing personnel to heightened risks of infection (Leaver et al., 2022).

### **Environmental Cleaning and Disinfection**

The hospital environment plays a vital role in the transmission of germs, especially on high-touch surfaces such as bedrails, doorknobs, and medical equipment. Environmental cleansing and disinfection are thus crucial to IPC procedures. Healthcare institutions must set cleaning schedules that emphasise patient care areas, isolation units, and operating theaters (Humphreys et al., 2023). Disinfectants with established efficiency against common pathogens should be used to assure surface decontamination. Reusable medical equipment, such as surgical tools and endoscopes, must undergo sterilization operations to eradicate all bacteria. Sterilization processes include autoclaving, ethylene oxide gas, and chemical disinfectants. Failure to effectively sterilize equipment has been associated with HAIs, underlining the necessity for careful adherence to standards. Environmental cleaning professionals need training on the proper use of cleaning products and processes. Regular monitoring and feedback guarantee that cleaning requirements are constantly fulfilled (Assiri et al., 2021).

### **Isolation and Cohorting of Patients**

Isolation procedures are necessary for handling patients with infectious illnesses. By segregating these individuals from others, healthcare institutions may limit the spread of diseases. Types of Isolation include

- Contact Precautions: Used for infections spread via direct or indirect contact (e.g., methicillin-resistant *Staphylococcus aureus* [MRSA]).
- Droplet Precautions: Applied for infections transmitted by respiratory droplets, such as influenza.
- Airborne Precautions: Necessary for illnesses spread by airborne particles, such as TB and measles (Currie, 2022).

### **Cohorting**

In circumstances when individual isolation rooms are unavailable, cohorting (grouping patients with the same infection) might be an effective option. However, careful processes must be followed to avoid cross-contamination (Patterson et al., 2020).

### **Safe Injection Practices**

Unsafe injection practices are a substantial cause of HAIs and bloodborne illnesses, such as hepatitis B, hepatitis C, and HIV. Adherence to proper injection methods decreases these hazards. Training healthcare personnel on safe injection procedures and monitoring adherence are critical for minimising epidemics related with hazardous practices. Important guidelines include the use of fresh, sterile syringe and needle for each patient, avoiding the reuse of single-dose vials and the disposal of sharps in designated sharps containers immediately after use (Schaefer et al., 2020).

### **Waste Management**

Healthcare waste contains infected, non-infectious, and hazardous items, each needing appropriate disposal strategies to reduce environmental contamination and infection hazards.

Infectious waste needs autoclaving or incineration. Hazardous waste must be managed

according to environmental safety requirements and Non-infectious garbage may be disposed of using standard waste management systems. Using color-coded containers at the site of waste creation simplifies segregation and decreases the danger of inappropriate disposal (Aziz et al., 2021).

### **Respiratory Hygiene and Cough Etiquette**

Respiratory hygiene tries to prevent the transmission of respiratory germs, such as those causing TB, influenza, and COVID-19. Recommendations include covering the mouth and nose with a tissue or elbow while coughing or sneezing. The disposal of tissues promptly after use and the providing of masks to patients with respiratory complaints. Healthcare institutions may encourage respiratory hygiene by posting instructional posters and assuring the availability of hand sanitizers and masks (WHO, 2023).

### **Vaccination of Healthcare Professionals**

Vaccination programs protect healthcare professionals from vaccine-preventable infections, lowering absenteeism and boosting overall infection control. Common vaccinations include Hepatitis B., Influenza and COVID-19. Healthcare organizations must keep vaccination records and give free or discounted immunizations to personnel (Maltezou et al., 2022).

### **2.1.5 Challenges in Implementing IPC Measures in Healthcare Settings**

There are many reasons why some organizations do not comply with IPC norms consistently. Some reasons are systemic and organizational while others are human. The challenges described are particularly true for Nigeria, an LMIC, because having and "structurally inefficient" systems makes IPC implementation even more challenging.

#### **Resource Limitations**

Lack of the necessary resources to control infections makes the adoption of IPC measures particularly challenging. Adequate IPC requires PPE, antiseptic hand hygiene products, sterilizers, and products for cleaning the environment. LMIC healthcare organizations often do not stock staple PPE such as gloves, masks, and gowns. During the COVID-19 pandemic, numerous hospitals had dangerously insufficient PPE, which exposed healthcare workers to greater risk of infectious pathogen exposure (Lowe et al., 2021). Despite the fact that hand hygiene is among the most effective practices for infection prevention and control (IPC), a variety of healthcare facilities still lack resources like soap, alcohol-based hand rubs, and even clean water. WHO statistics actually show that the absence of basic water supplies in health care institutions is a world wide phenomenon, in 25% of these institutions, hand hygiene and water supplies, is more than just a basic resource, but a requisite in sticking to the hand hygiene rules (WHO, 2023). Additionally, limited supplies of autoclaves, and other sterilization technologies, lessen the capacities of proper reused medical instrument disinfection, which leads to incidents of health care-associated infections (HAIs). Inequitable levels of available of resources lead to an uneven implementation of infection control IPC practices which in turn puts the risk of infections on both the patients and the health care workers themselves (WHO, 2020).

### **Lack of Training and of Knowledge**

Ongoing education and adequate training are essential for healthcare staff to understand and implement the procedures of infection prevention and control (IPC). Nevertheless, numerous healthcare establishments do not prioritize training on IPC due to the lack of finances and personnel. There is evidence of numerous healthcare workers not having the necessary fundamental knowledge of the IPC protocols on the various aspects of hand hygiene and the safety of injections (Zhang et al., 2024). A Nigeria based study established that only 60% of health workers demonstrated the necessary knowledge of the principles of IPC (Ogboghodo et al., 2021). There are also occasions where training on IPC is irregular and leaves staff untrained for any escalating threats. These include multidrug-resistant organisms (MDROs) and new and emerging infectious diseases, particularly COVID-19. Disparate instructions from various health organizations can also create confusion for healthcare staff and create barriers to the compliance of IPC (Egan, 2021).

### **Poor Compliance with IPC Protocols**

The challenges of sustained compliance with IPC protocols during the provision of healthcare is a pervasive challenge even when IPC resources and teaching is continuous. The reason Apostates of IPC guidelines may underestimate the risks associated non-compliance or may be the consequence of fatigue and time pressures. For healthcare professionals on the frontline of patient care the most basic and essential components of IPC like hand hygiene or environmental cleaning is viewed as a time wasting activity. Habits of any sort can be difficult to change especially when healthcare professionals feel there is no reason to change (Alhumaid et al., 2021).

## **Cultural and Behavioral Challenges**

In some situations, healthcare personnel might not view IPC as essential. The risk of unprotected contact with an infected patient is viewed as too negligible to warrant the measures. Cohorting and isolation of patients with transmissible infections is traumatic not only for the patients but for Health Care professionals due to stigma. Traditional behaviours, such as reluctance to wear personal protective equipment (PPE) or uneven hand hygiene, might be in direct opposition with contemporary IPC practices (Irfan et al., 2021).

## **Deficiencies in Infection Control and Prevention**

Resource-limited countries have multiple barriers preventing the construction of facilities appropriate for the implementation of effective infection control. Hospitals and other healthcare facilities are characterized by high patient to staff ratios meaning staff have limitations with respect to achieving physical distance and isolation requirements. Unhindered airflow and poorly operating ventilation systems heighten the risks of airborne transmission of pathogens such as TB and COVID-19. Healthcare institutions are also likely to lack appropriate isolation facilities for infected patients which increases the likelihood of cross-contamination (Khan & Nott, 2021).

## **New and Emerging Infectious Diseases**

New infectious diseases such as COVID-19, Ebola, and other multi drug resistant pathogens create new and unprecedented challenges for the implementation of IPC. Acutely evolving illnesses may make planning and resource allocation seem futile and ultimately unsuccessful. The implementation of IPC for newly emerging infectious diseases is very fluid, which may create confusion for staff (Wardhani, 2023).

## **2.2 Theoretical Review**

### **2.2.1 Health Belief Model (HBM)**

The Health Belief Model (HBM) is a psychological paradigm created in the 1950s to clarify the reasoning behind health behaviors. It asserts that the health behavior of adopting preventive actions, such as IPC measures, is driven by the individual's perceived health risk and the potential reward of taking the action. The HBM articulates six core components: perceived vulnerability, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. Each component sheds light on the behavior of healthcare staff in relation to IPC adherence (Anuar et al., 2020).

Perceived susceptibility pertains to one's own appraisal of the risk of infection. Healthcare personnel believing that they are at a higher risk of healthcare-associated infections (HAIs) are more inclined to adopt infection control practices. Literature suggests that during outbreaks, such as the COVID-19 pandemic, heightened awareness of personal risk drove healthcare staff to adhere to standards of hand hygiene and the wearing of personal protective equipment (PPE) with greater zeal. Complacency, on the other hand, is usually associated

with a low sense of threat (Cerda and García, 2021).

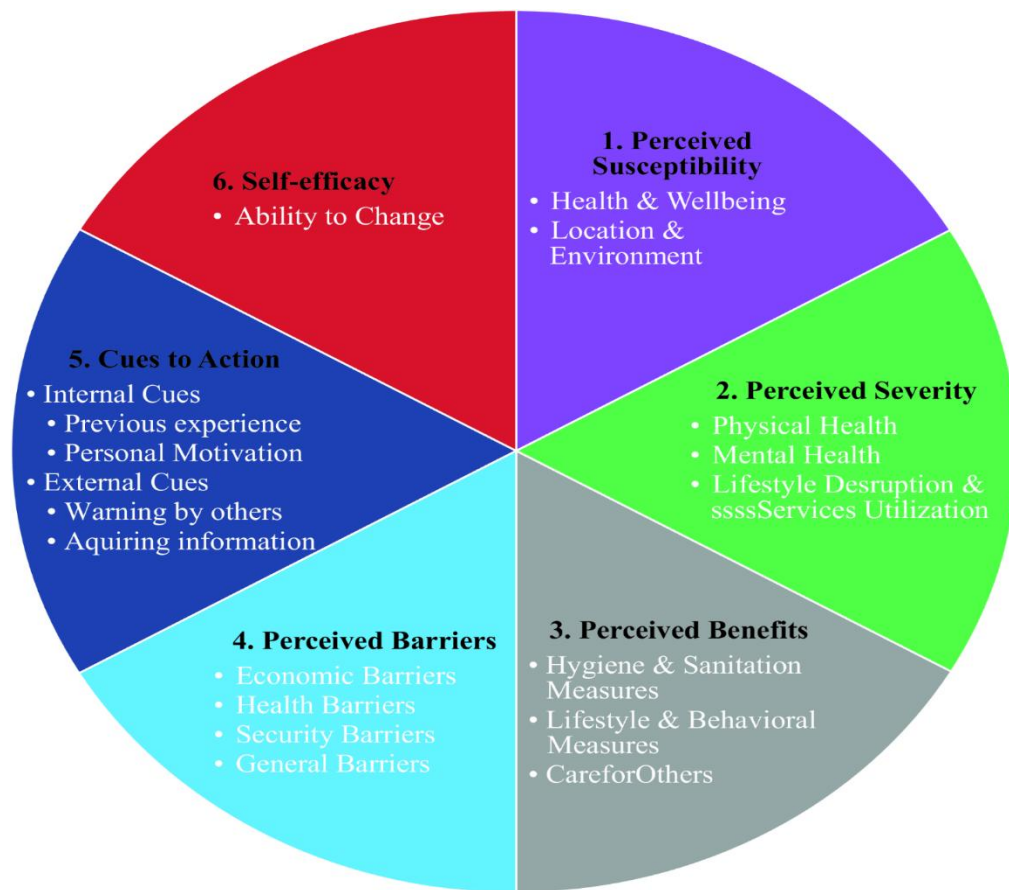
Perceived severity is concerned with individuals' evaluations of the potential outcomes of contracting an illness. Those in the healthcare field are aware of the lengthy hospitalizations, increased mortality, and other serious personal health ramifications associated with health care associated infections (HAIs), and are therefore most likely to adhere to the infection prevention and control (IPC) measures. Critical care nurses tend to have stronger adherence to these procedures, as they are more acutely aware of the potentially devastating consequences of infections in patients who are critically ill (Devi et al., 2022).

This extends to an individual's confidence in the effectiveness of the preventive measures in question. Healthcare workers with this belief are more likely to adhere to IPC measures. Evidence-based educational interventions and promotional materials documenting the impact of IPC compliance on infection rate reductions reinforce this perception (Muzayyana and Aini, 2024).

Healthcare staff adherence to IPC measures is de-motivated by time, pain, and inadequate resource barriers. For instance, painful PPE (personal protective equipment) associated with long use was a major barrier during the COVID-19 pandemic (Elliott et al., 2023).

In considering signals to action within the context of behavioral change, one might focus on the external or internal stimuli. Within the context of IPC, these might be training, supervisor prompts, hand hygiene banners, or local outbreak news. Reminders and teaching materials that are used consistently within a facility enhance adherence to guidelines surrounding IPC.

Self-efficacy, or the belief in one’s ability to perform a specific behavior, is critical. Healthcare staff with higher self-efficacy will implement IPC measures more consistently. Training that is more practical, skill-building workshops, and mentoring are pertinent forms to achieve this (Muzayyana and Aini, 2024).



**Figure 1: Sub-categorization of Health Belief Model constructs based on reviewed articles (Ullah et al., 2024)**

### 2.2.2 Application to the Study

Using the Health Belief Model as a framework to understand how knowledge, perceptions, and attitudes shape the IPC behaviors of the respondents in the study. Under perceived susceptibility, UBTH staff understand and acknowledge that they are at risk on a daily basis. Things like exposed bodily fluids, sharps, and aerosols are commonplace. This is reflected in the adherence of IPC guidelines. For instance, an emergency room nurse may realize that a monetary slip in gloves may expose them to Hepatitis B or even HIV and so becomes more vigilant.

Under perceived severity, and the downplaying of severity of hospital-acquired infections (HAIs) (which are the hospital-acquired complications and infections after a healthcare procedure) and neglecting of IPC guidelines is a possibility. Non-compliance and neglect of the protocols leads to possible grievous complications, death and even an outbreak in the hospital. This logic is more likely to lead to compliance and more strict adherence to the guidelines.

Regarding perceived advantages, this aligns mostly with the opposite end of perceived severity. It suggests that understanding risk-reducing compliance should encourage UBTH professionals to imitate the behavior. Those who witness higher infection control rates and sustained hygiene practices are likely to become champions of hygiene adherence. This demonstrates that compliance cannot be relegated to the duties of a job, but should rather be seen as a lifesaving habit.

For perceived obstacles, a health worker at UBTH, for example, could know the steps of a protocol, but due to exceptional circumstances, e.g., fatigue and resource shortages, may skip them. This creates the need to clarify the line between ignorance and compliance.

To signal to self-efficacy, an outbreak should serve as a wake-up call in UBTH. Regular workshops, infection surveillance reports, or peer-led IPC campaigns are examples of such “cues to action.” With self-efficacy in UBTH, training focused on mentorship, simulation, and constructive criticism helps professionals build the confidence to IPC under pressure as well as consistently pull IPC skills.

This study evaluates how well healthcare professionals at UBTH understand and apply the Health Belief Model (HBM) and its components in practice. Identifying gaps in knowledge and perceived barriers can inform decision-making around compliance with IPC and improving strategies to mitigate HAI incidence in the institution.

## **2.3 Empirical Review**

### **2.3.1 Awareness of IPC Among Healthcare Professionals**

One case study involves Ezeudu et al. (2022) entitled Healthcare Waste Management in Nigeria: A Review. This research arose from the need to address the risks to public health and the environment posed by the improper management of waste in the country's healthcare institutions. This study sought to evaluate the practices cited in the literature regarding healthcare waste management (HCWM) and the awareness of healthcare personnel and the challenges in the health system that are detrimental to effective waste disposal. Being a review-based study of the literature, reports, and policy documents, Ezeudu et al. (2022) focused on the management of infectious waste and practices on waste segregation and the responsibility of waste management by healthcare workers. Ezeudu et al. (2022) reported that in the healthcare institutions surveyed, only 45% of staff were knowledgeable about the waste segregation practices that were sufficient. Of the facilities examined, 30% were found to have poorly managed disposal of infectious waste, attributing the problem to limited training, the absence of color-coded disposal bins, and a lack of supervision regarding disposal practices. Most rural hospitals were found to be more disadvantaged, as they lacked disposal systems and violence treatment centers. Ezeudu et al. (2022) thus stated that the waste generated by healthcare institutions in Nigeria poses a public health problem that must be addressed.

The authors emphasized the need for the prompt execution of national guidelines along with enhanced financial support and ongoing training to close the knowledge deficit and address compliance issues, especially in neglected areas.

Alhumaid et al., 2021, conducted a systematic review on the 'Knowledge of Infection Prevention and Control Among Healthcare Workers and Factors Influencing Compliance'. This study focused on the global understanding and adherence of healthcare professionals to infection prevention and control (IPC) practices, considering the challenges of antimicrobial resistance and the outbreaks of infectious diseases. The authors conducted a systematic review of the literature and analyzed 46 studies conducted on different continents, including Africa, Asia, and the Middle East, and identifying the barriers to compliance on the factors the review listed. With a variable range, the healthcare workers' awareness score on infection prevention and control ranged from 40-85% through the studies. The most frequently reported barriers to compliance included lack of PPE (67% of studies), inadequate institutional support (43%), and sporadic training programs. Urban hospitals had higher compliance rates than rural hospitals, largely due to better resource distribution and control. The authors concluded that compliance on IPC protocols primarily depends on the workers' awareness of the protocols, training, and resource availability. The authors called for proactive measures to narrow the compliance divide and advocate for a more robust IPC framework worldwide, particularly in resource-poor settings.

Ochie et al. (2022) conducted a study entitled Infection Prevention and Control: Knowledge, Determinants and Compliance Among Primary Healthcare Workers in Enugu Metropolis, South-East Nigeria. The aim was to assess the understanding and implementation of IPC practices among primary healthcare workers, given that they are typically the first contact to patients in urban and peri-urban areas. It was a cross-sectional descriptive involving 242 healthcare workers across several primary health care centers in Enugu. The study used self administered questionnaires on the pillars of IPC, exposure to training, compliance, and level of infrastructure support. It was established that although 78.5% of the participants knew the general principles of IPC, only 38.8% fully complied with the IPC routines on a daily basis. For example, only 44.2% of health workers were able to explain sterilization techniques and 56.7% engaged in waste disposal. The influence of training on compliance within the 12 months prior to the study was statistically significant ( $p < 0.05$ ) and the 62.3% of respondents who cited lack of institutional oversight as a reason for non-adherence were significant to the study. The authors concluded that there was little understanding of advanced IPC practices including IPC compliance and control, waste disposal, and sterilization techniques among primary care health workers in Enugu.

Periodic training, enhanced supervision, and institutional reforms to strengthen IPC implementation at the grassroots level will certainly be beneficial, as the study suggested.

Ogboghodo et al. (2020) studied employee satisfaction in a teaching southern Nigerian hospital. The preparation and responses of the hospital to the pandemic within the context of the employee's perceptions of risks and support rated foremost in the understanding and evaluation of health facilities. This descriptive cross-sectional study was limited to health personnel at the University of Benin Teaching Hospital (UBTH). It included physicians, nurses, and other clinical staff under an omnibus sample of 352. The study used a semi-structured questionnaire to gauge employee satisfaction and assess the extent of preparedness for IPC, resource availability, staff training, and the overall employees' perceptions. It turned out that 70% of the staff respondents had a basic understanding of the hand hygiene protocols, but only 50% could accurately identify all five WHO moments of hand hygiene. Also, 61.4% of the employees expressed dissatisfaction with the availability of PPE, 47.9% felt support was top management was insufficient. It was finally concluded that, although there was basic awareness of IPC principles, the overall preparedness of the facility and satisfaction of the staff was moderate at best.

The authors noted the importance of active management, the consistent availability of PPE, and ongoing education to guarantee the safety and morale of healthcare personnel during epidemiological emergencies.

Tomczyk et al. (2022) aimed to investigate the infection control and prevention practices and gaps within and across different levels of healthcare settings as described in the title of their work, *Infection Prevention and Control in Health Care: A Systematic Review of Practices and Gaps Across Income Settings*. One of the key objectives of this study was to assess healthcare workers' knowledge and compliance levels with the IPC procedures, and to identify global IPC knowledge disparities and common barriers. This systematic review comprised several observational studies spanning multiple countries and continents, including Europe, Africa, Asia, and South America. The authors evaluated training accessibility, organizational practices, PPE availability, and ongoing supervision as IPC compliance gaps. They demonstrated that personnel in high-income countries (HICs) exhibited greater knowledge and compliance with IPC practices than their counterparts in low- and middle-income countries (LMICs). The authors attributed this discrepancy to HICs' far greater resources, more training opportunities, and stronger institutional backing. They emphasized that to bolster global IPC compliance, especially in resource-weak settings, there is a need to improve training and strengthen institutional support.

Chakma et al. (2024) examined a study titled *the Impact of Targeted IPC Training on Hand Hygiene and PPE Use Among Healthcare Workers*. The study sought to determine whether the use of focused instructional sessions would positively influence knowledge and practice regarding primary infection control measures. It was a quasi-experimental study conducted in several healthcare centers and aimed at healthcare workers who received integrated training on hand hygiene and appropriate PPE use, and pre- and post-training evaluations were designed to gauge knowledge improvement. It was discovered that the participants had considerable improvement in knowledge scores after the focused training sessions. The study highlighted the need to concentrate IPC training around core practices to improve infection control compliance. It was finally established that practical, focused training modules improve healthcare workers' knowledge and practical adherence to IPC protocols, specifically in hand hygiene and PPE use.

Khadse et al. (2023) study, titled Antimicrobial Stewardship Awareness and IPC Compliance Among Healthcare Workers in Germany, assessed how awareness of Antimicrobial Stewardship Programs (ASPs) influenced infection control (IC) practices among German hospital clinical staff. This study was designed as descriptive cross-sectional and involved use of structured online surveys which was distributed to physicians, nurses, and infection control officers at 10 major hospitals in Germany. They discovered that healthcare professionals who had a more robust understanding of the ASPs had a significantly stronger adherence to standard IPC practices. They assessed the correlation of antimicrobial knowledge to institutions that had lower incidences of multidrug resistant infections. They recommended that stronger IPC measures can be adopted at institutions to adjust to the integrated measures for patient safety in order to control antimicrobial resistance, as this combined approach will enhance infection control.

### **2.3.2 Compliance of IPC Among Healthcare Professionals**

Weldetinsae et al. (2023) outlined another study titled, “Adherence to Infection Prevention and Control Measures and Risk of Exposure among Health - Care Workers: A Cross - Sectional Study from the Early Period of COVID-19 Pandemic in Addis Ababa, Ethiopia.” This study was framed during a time when the coronavirus pandemic was exerting considerable and extreme risk on Ethiopians, as well as healthcare systems and workers throughout the world, and raising the overall challenge of COVID-19. This study was framed in the context of the risks that poorly implemented and infection adjustable infection control practices could pose. The study aimed to assess the extent of resource infection prevention and control (IPC) practices socially in the Addis Ababa public healthcare system. Through a public hospital facility-based Addis Ababa cross-sectional methodology, the study aimed to assess the practice of infection control and resource in a sample sized 1,062 healthcare workers drawn from six public major hospital system and deployed a structured questionnaire for facility data. In terms of the extent of infection control practices, “only” 52.1 percent of the respondents could be classified as adherence to the complete to recommended practices of infection control. The practice of hand hygiene and the wearing of N95 mask was particularly alarming in that 33.9 percent and 41.3 percent of the respondents, respectively, were non-compliant.

In addition, employees participating in 2 or more IPC training sessions in a year were 40% more likely to comply with the required standards of hand hygiene, compared to employees who had no training. Additionally, other barriers included insufficient PPE, lack of administrative support, and few training opportunities. They concluded that the risk of unsafe COVID-19 exposure and contact placed healthcare workers at a high level of risk. The study emphasized that training offered must be continuous, resources should be relevant, adequate, and readily available, and that administrative support is necessary to improve compliance with IPC protocols in any healthcare setting.

The study “Hand Hygiene Practices Among Healthcare Workers in Tertiary Hospitals in China: Evaluation and Compliance” was conducted by Hong and Xu (2024). The growing emphasis on hand hygiene as the foundational primary IPC measure in preventing HCAs inspired this study. It involved the countries three major tertiary hospitals in a cross-sectional study format. The researchers assessed the knowledge, practice, and compliance of the targeted respondents with WHO hand hygiene protocols by using a mix of structured questionnaires and observation checklists. A majority of the respondents appreciated the importance of hand hygiene and a considerable portion of the healthcare professionals practiced all five moments of hand hygiene. Institutional feedback and monitoring were underscored in the study as crucial to sustained high compliance rates. The researchers concluded that compliance with hygiene practices by the healthcare workers is supported by ongoing updated training and supervision along with high safety standards in the facility.

The compliance of healthcare workers with preventive measures and the global trends was analyzed by Alhumaid et al. (2021). In this case, the focus was on the impact on trainings received around the compliance to infection prevention and control measures and outcomes such as needle stick injuries. This integrated systematic review utilized evidence pertaining to a variety of global studies on healthcare workers from different healthcare contexts and systems. It was noted by the authors that healthcare professionals who participated in a minimum of two IPC training sessions every year sustained materially fewer needle stick injuries and reported improvement in practices with respect to personal protective equipment. In this review, the authors argued that sessions which were frequent, consistent, and interactive in nature attributed much to the increase in behavioral safety. It was thus, concluded by the authors, that the presence of structured ongoing IPC training should be regarded as one of the strongest predictors of compliance, as it leads to a marked reduction of occupational risks in healthcare settings.

The training conducted involved simulations, specifically the study by Greaves et al. (2023) *Simulation-Based Training for PPE Use: A Comparative Study on IPC Compliance*, which assessed the impact of different training methods on healthcare workers' practical skills in PPE adherence. Here, the researchers conducted a comparative experimental study in which a pair of study participants received a set of theoretical instructions while the other set received a set of hands-on exercises involving full simulation training on PPE application, doffing, and sequential donning. In this study, the researchers found that the simulation team demonstrated a significant improvement in the measures of adherence to PPE application and confidence in IPC measures claimed to be used in real scenarios. Consequently, the researchers concluded that simulation IPC training not only incorporated higher levels of competence but also compliance, thereby endorsing the practice of simulation training as a standard approach in IPC training delivered to healthcare workers.

Debrah et al. (2021) examined the text entitled *Effect of Refresher Training on Waste Management Practices Among Healthcare Workers in Nigeria*. The study centered on the importance of continuous education in sustaining IPC compliance. This was a cross-sectional study with a follow-up intervention that consisted of regular refresher training on waste segregation and disposal along with other IPC-related measures. It was observed that compliance with waste management protocols was markedly higher among the healthcare workers who received periodic refresher training. The study concluded that single retraining sessions provided no sufficient basis for ensuring sustained adherence. This is in consideration of the constantly changing and developing healthcare systems.

Yilma et al. (2024) contextualized IPC Training in resource-limited settings: Lessons from Rural Africa. The focus was on evaluating the extent to which localized and community-based training initiatives impact the community's adherence to IPC, especially in resource-challenged settings. This was a community-based intervention study involving a few African countries. The Rural Health League was approached to consider local constraints (e.g., PPE, infrastructure, and staffing) for the un-structured rural health facilities. Health personnel from those facilities who received training reported improved adherence to IPC and lower rates of healthcare-acquired infections. They reasoned that the training of IPC was more useful in resource-limited environments, especially when such training was framed within the realities of the local context. Training that considers systemic constraints fosters interest and participation, which aids in the constructive utilization of the training.

### **2.3.3 Challenges of IPC Among Healthcare Professionals**

Houghton et al. (2022) commented on the study *Barriers and Facilitators to Healthcare Workers' Adherence to Infection Prevention and Control Guidelines: A Global Qualitative Evidence Synthesis*. It sought to understand the perceptions and experiences of healthcare workers concerning IPC compliance and the difficulties faced, primarily in LMICs. It was a qualitative evidence synthesis based on 81 qualitative studies within a variety of healthcare contexts. The study dealt with the themes of attitudes toward IPC compliance, structural impediments, and institutional culture. The authors noted the healthcare workers' knowledge of basic IPC was not a major impediment to compliance. Limitations on the institutional resources, such as the availability of water, PPE, hand hygiene stations, and staffing levels, played a major role in the compliance. Further, in many LMICs, the weak enforcement of IPC compliance and guidelines and the use of outdated ones led to a reduction in compliance. They finally noted the need to address structural and systemic barriers to enhance compliance. The authors advocated for the strengthening of institutional infrastructure, and the incorporation of routine training and active leadership, to promote compliance.

Wanyonyi et al. (2024) focused their study titled IPC Practices in Public Hospitals in Ungar: Gaps and Opportunities on assessing existing IPC frameworks in Ungar's public healthcare institutions and understanding where systems become antiquated and how they can be improved. This was a descriptive mixed-method study, where they employed surveys, interviews, and field notes from public hospitals located in three key Ungar regions. They identified that healthcare practitioners predominantly used older IPC frameworks, resulting in inconsistent application. Outdated IPC recommendations led many staff to express a concern on a lack of refresher training. Moreover, the absence of enforcement entities was a significant factor in high-risk areas, particularly surgery and emergency units. They ultimately stated that the modernization of IPC policies, routine staff training, and the formation of dedicated enforcement units as critical to the enhancement of Ungar public hospitals' IPC practices.

Horgan et al. (2024) conducted a study on Aseptic Technique Training and Its Impact on Postoperative Infection Rates in UK Surgical Units. The purpose was to assess the impact of training on a specific area of aseptic technique on clinical outcomes—infections—within the surgical context. This was a retrospective interventional study spanning four surgical units in the UK. It assessed infection rates in the post-training period and the pre-training period of several targeted training workshops on the aseptic technique. They showed a 30% decrease in infection rates in the surgical wards post training. Staff reported enhanced confidence and greater compliance with the aseptic technique. They established that targeted training on specific components of the IPC framework, in this case, aseptic practice, has a measurable positive impact on patient safety and the incidence of healthcare-associated infections.

## **2.4 Summary of Literature Review**

This literature review emphasizes the need for Infection Prevention and Control (IPC) among healthcare workers, particularly the impact of appropriate knowledge, guideline adherence, and institutional support on the decline of healthcare-associated infections (HAIs). Although IPC policies are instated, the lack of compliance demonstrated by healthcare workers seems to be a problem of insufficient training, restricted resources and increased workloads. The COVID-19 pandemic highlighted a lack of IPC preparedness; the need for ongoing education and appropriate resources remains. This study utilizes several key theories, particularly the Health Belief Model (HBM) addressing perceived risk and barriers and explaining IPC adherence the gap relates to the Theory of Planned Behavior (TPB) centered on attitudes, norms and perceived control. The Social Cognitive Theory (SCT) and Organizational Culture

Theory (OCT) address the impact of role modeling by leaders and the culture of the workplace on IPC practices. Empirical literature describes the gaps in IPC knowledge in healthcare workers, particularly in Nigeria, which has limited training resources and compliance to the required standards. Research from high-income nations demonstrates better IPC adherence levels; stronger institutional frameworks and uninterrupted training resources contrast with and low-resource settings facing implementation challenges.

Research on IPC still leaves much to be desired on understanding the particular difficulties that UBTH healthcare worker face in resource-constrained settings. While some studies mention compliance on a general level, little attention is paid to the details of the knowledge and adherence framework of the different healthcare worker cohorts. Moreover, there is a dearth of studies accounting for the effects of interventional approaches by the institution on IPC practices in Nigerian hospitals. This study seeks to fill in this gap by evaluating the knowledge, compliance, and the challenges that healthcare workers at UBTH face in implementing IPC. This, in turn, will offer possible initiatives for tailored interventions, training and policy to improve compliance on IPC practices, thereby improving patient safety and reducing HAIs in the hospital setting.

## **CHAPTER THREE**

### **METHODOLOGY**

This chapter described the research methodology that the researcher adopted in conducting this study. The various components of research methodology was discussed under their respective headings, including research design, study setting, target population, sample and sampling technique, instruments of data collection, validity and reliability of instruments, method of data collection, method of data analysis, and ethical considerations.

#### **3.1 Research Design**

This study adopted a descriptive cross-sectional research design. A descriptive design was appropriate because it allowed for the systematic assessment of awareness and compliance with infection prevention and control measures among healthcare professionals without manipulating variables. The cross-sectional approach enables data collection at a single point in time, making it efficient and suitable for capturing the current situation among healthcare professionals at the University of Benin Teaching Hospital, Benin City.

#### **3.2 Research Setting**

This study was carried out in University of Benin Teaching Hospital (UBTH), Benin City, Edo State. UBTH is a tertiary healthcare facility which was established in 1973. It is located in Ugbowo, Egor Local Government Area. Edo State comprise of 18 local government areas. Egor Local government area where University of Benin Teaching Hospital is located falls within the southern senatorial district of Nigeria. UBTH offers both clinical and

diagnostic services and offers a wide range of services, which makes it an important healthcare facility in the state, region and the nation at large. It is estimated that UBTH has a bed capacity of over nine hundred and ten (910) (UBTH, 2024). UBTH has nineteen (19) clinical departments and three (3) Medical Laboratory Department and 3 emergency departments. These departments offer emergency services for the general/primary health needs of the people. They offer both outpatient and in-patient services and they are staffed with health professionals such as Doctors, Nurses and paramedics to carry out their daily routines

### 3.3 Target Population

The target population for this research included healthcare professionals at UBTH. This comprises physicians (420), nurses (721), radiographers (30), physiotherapists (24), medical laboratory scientists (180) directly engaged in patient care and associated services.

**Table 3.1 Target population distribution**

| <b>PARTICIPANTS</b>           | <b>FREQUENCY</b> |
|-------------------------------|------------------|
| Physicians                    | 420              |
| Nurses                        | 721              |
| Radiographers                 | 30               |
| Physiotherapists              | 24               |
| Medical laboratory scientists | 180              |
| <b>TOTAL</b>                  | <b>1375</b>      |

**Source: Human resources Department University of Benin Teaching Hospital January 2025.**

### 3.4 Sample Size

The sample size was determined using Taro Yamane formula for calculating sample size in a

cross-sectional study:

$$n = \frac{N}{1 + N(e^2)}$$

Where:

n = Required sample size

N = Target population

e = Margin of error (5.1% or 0.051)

$$n = \frac{1375}{1 + 1375(0.051^2)}$$

$$n = \frac{1375}{1 + 1375(0.0026)}$$

$$n = \frac{1375}{1 + 3.5763}$$

$$n = 300$$

### **3.5 Sampling Technique**

The sampling technique that was employed in this study is stratified random sampling. This method is considered appropriate because the study specifically targets healthcare professionals across different professional categories — such as doctors, nurses, laboratory scientists, pharmacists, and radiographers — at the University of Benin Teaching Hospital (UBTH), Benin City. Followed by random selection within each group to ensure proportionate and unbiased representation. This approach ensures that the participants

adequately reflect the diversity of healthcare professionals, thereby providing comprehensive and reliable data on infection prevention and control practices.

## STRATUM DISTRIBUTION OF THE SAMPLE SIZE

**Table 3.2: Sample size distribution**

| STRATUM                       | POPULATION SIZE | PERCENTAGE OF SAMPLE (%)    | FINAL SAMPLE SIZE |
|-------------------------------|-----------------|-----------------------------|-------------------|
| Physicians                    | 420             | $420/1375 \times 300=92$    | 92                |
| Nurses                        | 721             | $721/1375 \times 300 = 157$ | 157               |
| Radiographers                 | 30              | $30/1375 \times 300 = 7$    | 7                 |
| Physiotherapists              | 24              | $24/1375 \times 300 = 5$    | 5                 |
| Medical laboratory scientists | 180             | $180/1375 \times 300= 39$   | 39                |
| <b>TOTAL</b>                  | <b>1375</b>     |                             | <b>300</b>        |

### 3.6 Selection Criteria

To ensure the relevance and reliability of data collected, specific inclusion and exclusion criteria was applied in selecting participants for this study.

#### 3.6.1 Inclusion Criteria

This study will include:

1. Healthcare professionals (doctors, nurses, radiographers, physiotherapists, medical laboratory scientists) currently employed at the University of Benin Teaching Hospital (UBTH).
2. Healthcare professionals who have direct patient contact.
3. Healthcare professionals who voluntarily consent to participate in the study.

### 3.6.2 Exclusion Criteria

This study will exclude:

1. Non-clinical hospital staff, including administrative personnel, cleaners, and security staff, as they are not primarily responsible for IPC measures.
2. Clinical staffs who do not have direct contact diagnostically or treatment wise with patients such as porters and other important staffs who are not considered frontliners for this study like pharmacy due to their limited patient contact.
3. Healthcare professionals who are on temporary postings, or undergoing short-term clinical rotations at UBTH.
4. Individuals who decline to give informed consent to participate in the study.

### 3.7 Instrument for Data Collection

The instrument for data collection in this study was a self-structured questionnaire. This was developed based on the objectives of the study. The questionnaire was made up of four sections with. Questions which was carefully drafted, sequenced and constructed in a bid to get in-depth information that is useful and relevant to the study will be used.

**Section A:** consist of the demographic data of the participants (Age, Marital Status, Current Educational Level, Ethnicity).

**Section B:** The level of awareness of infection prevention and control (IPC) among healthcare professionals.

**Section C:** The level of compliance to infection prevention and control (IPC) among

healthcare professionals.

**Section D:** The challenges experienced by healthcare professionals in adhering to infection prevention and control (IPC).

### **3.8 Validity of instrument**

The instrument validity is pertained to its capability to accurately measure the intended construct or concept (Surucu & Maslakci, 2020). The various validity types assessed by researchers includes content, construct, criterion, and face to evaluate the instrument accuracy. For this research, face and content validity was utilized to validate the research tool. The questionnaire underwent validation by both the project supervisor and a field expert, and necessary adjustments was implemented by the researcher before starting the main study.

### **3.9 Reliability of instrument**

The reliability of an instrument referred to its stability and consistency in delivering uniform outcomes when assessing the same criteria under identical circumstances (Surucu & Maslakci, 2020). It essentially gauged how consistently the instrument produced similar results across multiple trials. A reliable instrument is one that could produce the same results if the behaviour was measured again by the same scale. The Cronbach's alpha reliability technique was employed in this study. This researcher conducted a reliability testing on the instrument by distributing 30 questionnaires, which constituted 10% of the total sample size of 300, to healthcare professionals (Doctors, nurses, radiographers, medical laboratory scientists and physiotherapists) at Edo Specialist Hospital (which are outside the sampled population). A

coefficient of 0.71 was obtained and the instrument was considered reliable.

### **3.10 Method of Data Collection**

A well-structured questionnaire was administered to healthcare professionals at the University of Benin Teaching Hospital until the required sample size of 300 is achieved. The healthcare professionals were approached at the University of Benin Teaching Hospital. The purpose of the study was explained to them, and the instrument for data collection was administered. Data collection was conducted by the researcher. The data collection took place during break periods, and on-the-spot retrieval of the administered copies of the questionnaire. Data collection lasted a week.

### **3.11 Method of Data Analysis**

The data collected was analyzed using the Statistical Package for the Social Sciences (SPSS) version 27.0. Descriptive statistics such as mean, frequency, and percentages were computed to summarize the data. Hypothesis testing was conducted using the Chi-square test of association, with the level of significance set at  $p < 0.05$ . The results of the analysis were then presented using tables, graphs, frequencies, and percentages to provide a clear overview of the findings.

### **3.12 Ethical Considerations**

Ethical approval was obtained from the Health Research Committee, University of Benin Teaching Hospital, Benin City. Permission was obtained from the various ward managers before proceeding with the research. Before data collection begins, participants received

detailed explanations about the research's purpose, content, and implications. They were assured of confidentiality, ensuring the protection of their personal and private information. Throughout the research, ethical guidelines were strictly adhered to, including the following considerations:

**Confidentiality:** Respondents' information was treated confidentially, with no request for names or addresses in the questionnaire. Participants understood that their responses are confidential and solely used for research purposes. No personal identifiers were used in any document or questionnaire to maintain anonymity.

**Voluntary Participation:** Participants was informed of their right to voluntary participation without facing penalties or bias. They can choose to withdraw or decline to provide information at any point if they feel uncomfortable or unsure.

**Avoidance of Plagiarism:** Proper citation of all authors used in the study was ensured, both within the content and in the reference page.

## CHAPTER FOUR

### RESULTS

This chapter deals with the representation of data collected from respondents on the assessment of awareness and compliance to infection prevention and control among health care professionals at UBTH, Benin city, Edo state. A total of 300 questionnaires were distributed to healthcare professionals in University Benin City Teaching Hospital, out of which 298 was properly filled and valid for data analysis, giving a response rate of 99.3%.

**Table 4.1: Sociodemographic characteristics of respondents**

| <b>Variable</b>              | <b>Frequency (n = 298)</b> | <b>Percent (%)</b> |
|------------------------------|----------------------------|--------------------|
| <b>Gender</b>                |                            |                    |
| Male                         | 104                        | 35                 |
| Female                       | 194                        | 65                 |
| <b>Age</b>                   |                            |                    |
| 18–24 years                  | 47                         | 15.8               |
| 25–34 years                  | 102                        | 34.2               |
| 35–44 years                  | 89                         | 29.9               |
| 45–54 years                  | 44                         | 14.8               |
| 55 years and above           | 16                         | 5.4                |
| <b>Department/Unit</b>       |                            |                    |
| Medical                      | 68                         | 22.8               |
| Surgical                     | 57                         | 19.1               |
| Emergency                    | 49                         | 16.4               |
| Pediatrics                   | 42                         | 14.1               |
| ICU                          | 35                         | 11.7               |
| Others                       | 47                         | 15.8               |
| <b>Professional Role</b>     |                            |                    |
| Doctor                       | 92                         | 30.9               |
| Nurse                        | 155                        | 52.0               |
| Physiotherapist              | 5                          | 1.7                |
| Radiographer                 | 7                          | 2.3                |
| Medical Laboratory Scientist | 39                         | 13.1               |

**Table 4.1 Cont'd**

| <b>Variable</b>                           | <b>Frequency (n = 298)</b> | <b>Percent (%)</b> |
|---|----------------------------|--------------------|
| <b>Years of Experience</b>                |                            |                    |
| Less than 1 year                          | 39                         | 13.1               |
| 1–5 years                                 | 107                        | 35.9               |
| 6–10 years                                | 86                         | 28.9               |
| Above 10 years                            | 66                         | 22.1               |
| <b>Highest Educational Qualification:</b> |                            |                    |
| Diploma                                   | 132                        | 44.3               |
| Bachelor's Degree                         | 57                         | 19.1               |
| Master's Degree                           | 15                         | 5.0                |
| Doctorate                                 | 94                         | 31.6               |

Table 4.1 shows the sociodemographic characteristics of the 298 respondents. The majority were female (65%), while males accounted for 35% of the sample. Regarding age distribution, most respondents were between 25–34 years (34.2%), followed by those aged 35–44 years (29.9%), 18–24 years (15.8%), 45–54 years (14.8%), and a small proportion aged 55 years and above (5.4%). In terms of departmental affiliation, respondents were primarily from the medical (22.8%) and surgical (19.1%) units, followed by emergency (16.4%), pediatrics (14.1%), intensive care unit (ICU) (11.7%), and other departments (15.8%). Professional roles were dominated by nurses (52.0%) and doctors (30.9%), while smaller proportions were physiotherapists (1.7%), radiographers (2.3%), and medical laboratory scientists (13.1%). Years of professional experience varied, with most respondents having 1–5 years (35.9%), followed by 6–10 years (28.9%), above 10 years (22.1%), and less than 1 year (13.1%). Regarding educational attainment, nearly half held a diploma (44.3%), followed by doctorate degrees (31.6%), bachelor's degrees (19.1%), and master's degrees (5.0%).

## Answering Research Questions

**Research Question 1:** What is the level of awareness of infection prevention and control (IPC) among healthcare professionals at UBTH?

**Table 4.2:** Awareness of infection prevention and control (ipc) among healthcare professionals

| Items  | Frequency  | Correct    | Wrong     | Mean | Remark |
|--|------------|------------|-----------|------|--------|
| <b>Which of the following is the most effective method to prevent the spread of infections in healthcare settings?</b>           |            |            |           |      |        |
| Wearing gloves only when dealing with infected patients  | 17 (5.7)   | 243 (81.5) | 55 (18.5) | 1.8  | Good   |
| Practicing proper hand hygiene before and after patient contact  | 243 (81.5) |            |           |      |        |
| Using face masks as the primary protective gear for all procedures   | 23 (7.7)   |            |           |      |        |
| Sterilizing equipment only once a day  | 15 (5.0)   |            |           |      |        |
| <b>Which of the following is NOT considered an element of standard precautions in infection control?</b>                         |            |            |           |      |        |
| Proper hand hygiene  | 13 (4.4)   | 234 (78.5) | 64 (21.5) | 1.8  | Good   |
| Use of personal protective equipment (PPE)   | 19 (6.4)   |            |           |      |        |
| Performing sterile procedures in nonsterile environments   | 234 (78.5) |            |           |      |        |
| Safe handling of sharps  | 32 (10.7)  |            |           |      |        |
| <b>What is the recommended duration for handwashing with soap and water to effectively reduce contamination?</b>                 |            |            |           |      |        |
| 10 seconds   | 21 (7.1)   | 221 (74.2) | 77 (25.8) | 1.7  | Good   |
| 20 seconds   | 221 (74.2) |            |           |      |        |
| 30 seconds   | 35 (11.7)  |            |           |      |        |
| 1 minute   | 21 (7.1)   |            |           |      |        |
| <b>Which of the following is considered an appropriate method for disposing of contaminated sharps in a healthcare facility?</b> |            |            |           |      |        |
| Throwing them directly into the regular trash bin  | 11 (3.7)   | 251 (84.2) | 47 (15.8) | 1.8  | Good   |
| Placing them in a puncture resistant, labeled sharps container   | 251 (84.2) |            |           |      |        |

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Soaking them in disinfectant for 5 minutes before disposal 24 (8.1)

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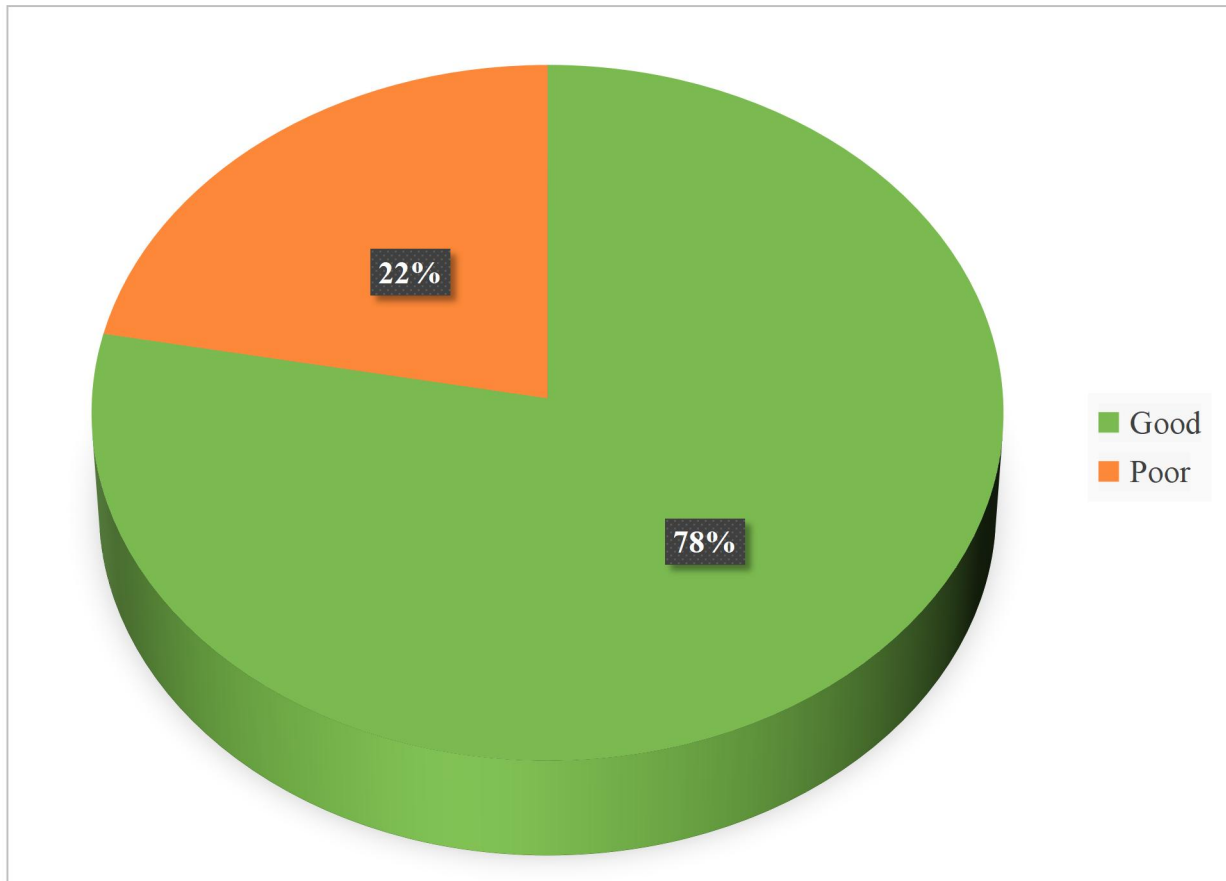
**Table 4.2 cont'd**

| Items  | Frequency  | Correct    | Wrong     | Mean       | Remark      |
|--|------------|------------|-----------|------------|-------------|
| <b>When using personal protective equipment (PPE), which of the following is the correct order for donning PPE before a procedure?</b> |            |            |           |            |             |
| Gloves, gown, mask, goggles  | 29 (9.7)   | 206 (69.1) | 92 (30.9) | 1.7        | Good        |
| Gown, gloves, goggles, mask  | 41 (13.8)  |            |           |            |             |
| Mask, gloves, gown, goggles  | 22 (7.4)   |            |           |            |             |
| Gown, mask, goggles, gloves  | 206 (69.1) |            |           |            |             |
| <b>What is the main purpose of implementing infection prevention and control (IPC) measures in healthcare settings?</b>                |            |            |           |            |             |
| To minimize the cost of healthcare related infections  | 19 (6.4)   | 242 (81.5) | 56 (18.8) | 1.8        | Good        |
| To enhance the comfort of patients and staff   | 17 (5.7)   |            |           |            |             |
| To prevent the transmission of infectious agents and protect patients and healthcare workers   | 242 (81.5) |            |           |            |             |
| To reduce the time spent on patient care procedures  | 20 (6.7)   |            |           |            |             |
| <b>Grand Mean</b>  |            |            |           | <b>1.8</b> | <b>Good</b> |

**Mean Cut-off = 1.5**

Table 4.2 presents the awareness of infection prevention and control (IPC) among healthcare professionals. The highest mean score of 1.8 was recorded in four items: identifying the most effective method to prevent infections as practicing proper hand hygiene, recognizing that performing sterile procedures in nonsterile environments is not a standard precaution, acknowledging the correct method for disposing of contaminated sharps, and understanding the primary purpose of IPC measures. These items were all rated as "Good." A slightly lower mean score of 1.7, also indicating "Good" awareness, was observed in the questions related to

the recommended handwashing duration and the correct order of donning personal protective equipment (PPE). The grand mean was 1.8, reflecting an overall good level of IPC awareness among the respondents.



**Figure 4.1: Pie chart showing the Knowledge of Standard Precautions**

Figure 4.1 shows that 233 (78%) had good knowledge of standard precautions, while 65 (22%) had poor knowledge.

**Research Question 2:** What is the level of compliance to infection prevention and control (IPC) among healthcare professionals at UBTH?

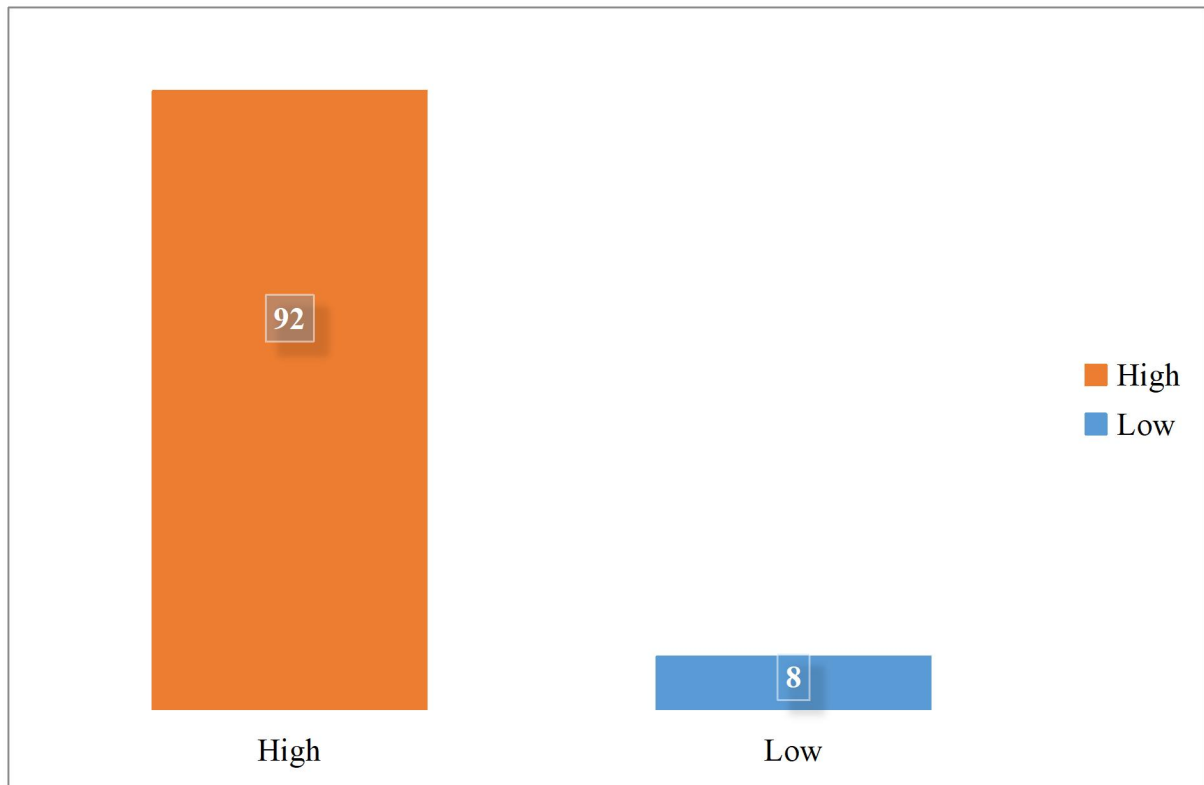
**Table 4.3: Compliance to infection prevention and control (IPC) among healthcare professionals**

| Items  | Always  | Sometimes | Rarely | Never | Mean              | Remark     |             |
|--|---------|-----------|--------|-------|-------------------|------------|-------------|
| How often do you perform hand hygiene before and after patient contact?  | 246(83) | 33(11)    | 13(4)  | 6(2)  | 3.7               | High       |             |
| When performing medical procedures, how frequently do you use personal protective equipment (PPE) according to the hospital's protocols? | 198(67) | 66(22)    | 20(7)  | 14(5) | 3.5               | High       |             |
| How often do you ensure the proper disposal of medical waste in accordance with IPC guidelines?  | 238(80) | 41(14)    | 12(4)  | 7(2)  | 3.7               | High       |             |
| How frequently do you adhere to infection prevention and control (IPC) guidelines during patient care?                                   | 212(71) | 61(20)    | 15(5)  | 10(3) | 3.6               | High       |             |
| How often do you disinfect reusable medical equipment appropriately after use?   | 220(74) | 52(17)    | 17(6)  | 9(3)  | 3.6               | High       |             |
| How promptly do you report any exposure to infectious agents in the hospital setting?  | 176(59) | 92(31)    | 22(7)  | 8(3)  | 3.5               | High       |             |
|  |         |           |        |       | <b>Grand Mean</b> | <b>3.6</b> | <b>High</b> |

**Mean Cut-off = 2.5**

Table 4.3 shows that the highest mean scores of 3.7 were recorded for performing hand hygiene before and after patient contact, and ensuring the proper disposal of medical waste, both indicating high compliance. This was followed by a mean score of 3.6 for adherence to IPC guidelines during patient care and disinfecting reusable medical equipment after use, also reflecting high compliance. The next mean score of 3.5 was noted for the use of PPE during

medical procedures and prompt reporting of exposure to infectious agents, equally categorized as high compliance. The grand mean was 3.6, indicating an overall high level of compliance to IPC among healthcare professionals.



**Figure 4.2: Bar chart showing compliance to infection prevention and control (ipc) among healthcare professionals**

Figure 4.2 shows that 273 (92%) demonstrated high compliance to infection prevention and control (IPC) measures, while 25 (8%) showed low compliance.

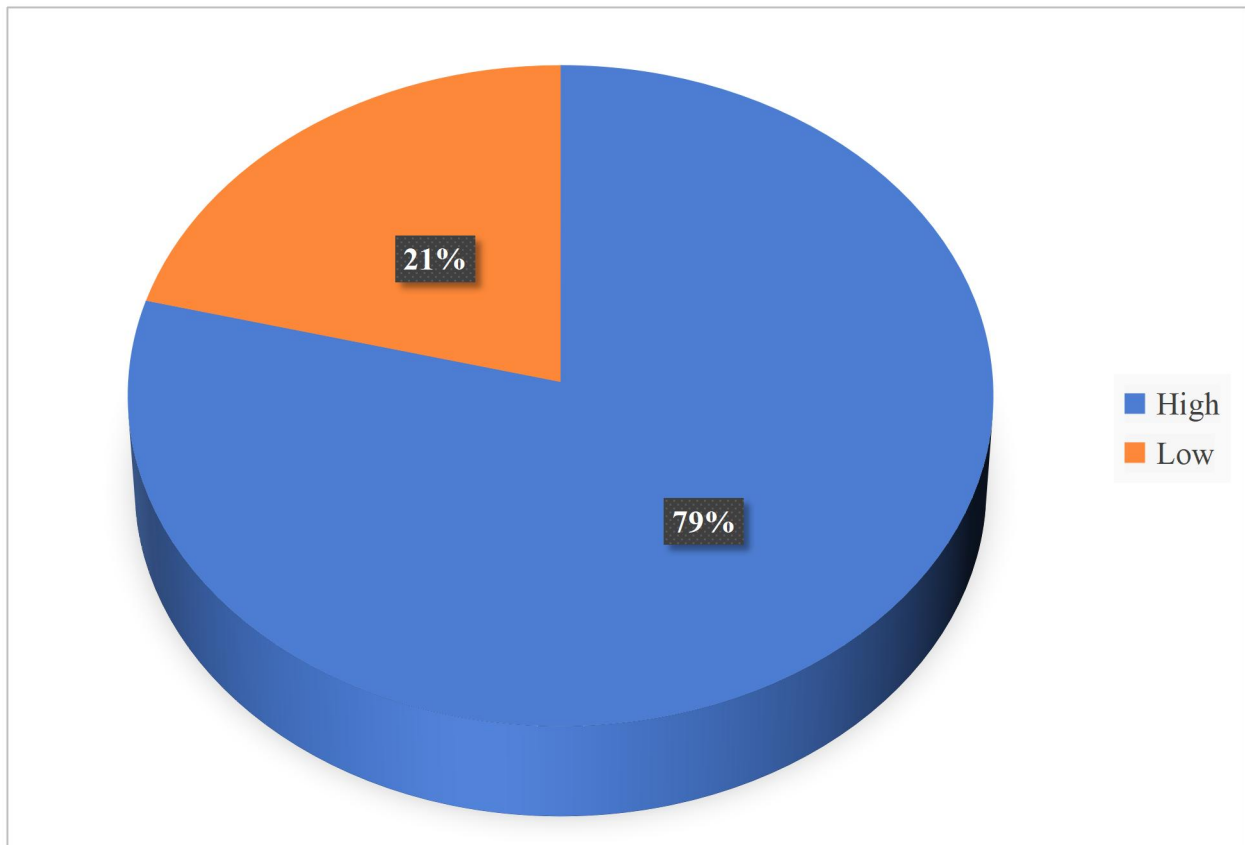
**Research Question 3:** What are the challenges experienced by healthcare professionals in adhering to infection prevention and control (IPC) at UBTH?

**Table 4.4: Challenges Experienced by Healthcare Professionals in Adhering to Infection Prevention and Control (IPC)**

| Items   | Strongly Agree | Agree   | Disagree | Strongly Disagree | Mean       | Remark      |
|---|----------------|---------|----------|-------------------|------------|-------------|
| Limited access to personal protective equipment (PPE), disinfectants, clean water, and hospital resources significantly hinders compliance with IPC measures. | 118(40)        | 138(46) | 33(11)   | 9(3)              | 3.2        | High        |
| High workload and the prioritization of urgent patient care over IPC protocols are major barriers to proper IPC adherence.                                    | 129(43)        | 124(42) | 37(12)   | 8(3)              | 3.3        | High        |
| Lack of supervision, support from hospital management, and inadequate enforcement of IPC guidelines negatively affect healthcare workers' compliance.         | 103(35)        | 144(48) | 37(12)   | 14(5)             | 3.1        | High        |
| Excessive training, regulations, or supervision can overwhelm healthcare workers and reduce their effective adherence to IPC practices.                       | 59(20)         | 96(32)  | 112(38)  | 31(10)            | 2.6        | High        |
| Regular audits, sufficient staffing, accessible hand hygiene facilities, and continuous support promote better adherence to IPC measures.                     | 173(58)        | 97(33)  | 17(6)    | 11(4)             | 3.4        | High        |
|   |                |         |          | <b>Grand Mean</b> | <b>3.6</b> | <b>High</b> |

**Mean Cut-off = 2.5**

Table 4.4 shows that the highest mean score of 3.4 was recorded for the item on regular audits, sufficient staffing, accessible hand hygiene facilities, and continuous support promoting better adherence to IPC measures. This was followed by a mean score of 3.3 for high workload and the prioritization of urgent patient care over IPC protocols as barriers to adherence. Limited access to PPE, disinfectants, clean water, and hospital resources had a mean score of 3.2, while lack of supervision and inadequate enforcement of IPC guidelines scored 3.1. The lowest mean score of 2.6 was recorded for the item stating that excessive training, regulations, or supervision can reduce adherence. The grand mean was 3.6, indicating a high level of perceived challenges among healthcare professionals in adhering to IPC measures.



**Figure 4.3: Pie chart showing challenges experienced by healthcare professionals in adhering to infection prevention and control (IPC)**

Figure 4.3 shows that 236 (79%) experienced a high level of challenges in adhering to infection prevention and control (IPC) measures, while 62 (21%) reported a low level of challenges.

## Hypothesis Testing

There is no significant relationship between the level of awareness and level of compliance to infection prevention and control (IPC) among healthcare professionals at UBTH.

**Table 4.5: Relationship between the level of awareness and level of compliance to infection prevention and control (IPC) among healthcare professionals**

| Compliance | Awareness |          | Test Statistics ( $\chi^2$ ) | df | P value | Decision |
|------------|-----------|----------|------------------------------|----|---------|----------|
|            | Good      | Poor     |                              |    |         |          |
| High       | 233(62.8) | 65(37.8) | 20.93983                     | 1  | 0.0004  | Rejected |
| Low        | 273(73.6) | 25(26.4) |                              |    |         |          |

Table 4.5 shows a statistically significant relationship between the level of awareness and level of compliance to infection prevention and control (IPC) among healthcare professionals, with a chi-square value of 20.94, degrees of freedom (df) of 1, and a p-value of 0.0004. The null hypothesis was rejected, indicating that healthcare professionals with higher awareness were more likely to exhibit high compliance to IPC measures.

## CHAPTER FIVE

### DISCUSSION OF FINDINGS

This chapter discusses the major findings of the research compared with the literature reviewed, the implication for nursing, summary, conclusion, Recommendations and Suggestions for further Studies.

#### 5.1. Discussion of Major Findings

The study assessed awareness and compliance with infection prevention and control (IPC) among healthcare professionals at UBTH, Benin City, Edo State. The sociodemographic characteristics of the study participants indicate a diverse healthcare workforce, with notable patterns in gender, age, professional roles, departmental affiliation, years of experience, and educational qualifications. Understanding these characteristics provides important context for interpreting IPC awareness and compliance. The gender distribution showed a predominance of female healthcare workers (65%) compared to males (35%), reflecting common trends in healthcare settings and consistent with previous studies such as Ochie et al. (2022) and Weldetinsae et al. (2023). The age profile indicated a relatively young workforce, with 64.1% of respondents under 45 years old. The largest age group was 25–34 years (34.2%), followed by 35–44 years (29.9%), suggesting a workforce potentially more receptive to IPC training and new protocols, in line with findings from Alhumaid et al. (2021). In terms of professional roles, nurses constituted the largest group (52.0%), followed by doctors (30.9%), with other healthcare professionals, including medical laboratory scientists, physiotherapists, and radiographers, making up the remainder. This distribution provides a comprehensive view of

IPC practices across different healthcare roles, similar to observations reported by Ogboghodo et al. (2020), though with slightly different proportional representations. Departmental affiliation showed representation across key clinical areas, with medical (22.8%) and surgical (19.1%) units having the highest representation, followed by emergency (16.4%), pediatrics (14.1%), ICU (11.7%), and other units (15.8%). This broad departmental mix is relevant for understanding IPC compliance in both general and high-risk areas, aligning with studies emphasizing the need for targeted IPC training in critical care and surgical settings (Horgan et al., 2024; Greaves et al., 2023). Experience levels varied, with 49% of respondents having 5 years or less experience, while a significant proportion (22.1%) had more than 10 years of service. This distribution provides insight into potential differences in IPC knowledge and adherence across experience levels, which may differ from trends observed in other settings, such as Hong and Xu (2024). Educational qualifications revealed a well-educated workforce, with the majority holding diplomas (44.3%) or doctorates (31.6%), and smaller proportions holding bachelor's (19.1%) or master's degrees (5.0%). This profile suggests a strong foundation for IPC compliance, though further investigation may be warranted to explore how educational level influences IPC knowledge and practice, as highlighted by Tomczyk et al. (2022).

### **Level of awareness of infection prevention and control (IPC) among healthcare professionals**

The findings regarding awareness of infection prevention and control (IPC) among healthcare professionals revealed that 78% of respondents demonstrated good knowledge of standard

precautions, while 22% showed poor knowledge. This overall positive result aligns with several previous studies, though with some notable variations in specific areas. The study found that 81.5% of healthcare workers correctly identified proper hand hygiene before and after patient contact as the most effective infection prevention method. This finding corresponds well with Ogboghodo et al. (2020), who reported 70% of healthcare workers demonstrated basic hand hygiene knowledge, though slightly higher than their findings. However, when it came to specific hand hygiene duration, 74.2% correctly identified the 20-second requirement, indicating a slight gap between general awareness and detailed procedural knowledge. Regarding standard precautions, 78.5% of respondents correctly identified non-standard elements, matching closely with Ochie et al. (2022), who reported 78.5% awareness of general IPC principles. The current study showed stronger results in specific areas such as sharps disposal, where 84.2% of respondents demonstrated correct knowledge of proper disposal methods. PPE knowledge showed some concerning gaps, with only 69.1% correctly identifying the proper donning sequence. This finding aligns with Weldetinsae et al. (2023), who noted significant gaps in PPE compliance, though their reported compliance rate of 52.1% was lower than the knowledge levels found in the current study. Understanding of IPC's fundamental purpose was strong, with 81.5% correctly identifying its primary role in preventing pathogen transmission and protecting both patients and healthcare workers. This high level of basic understanding contrasts with Alhumaid et al. (2021)'s findings, where awareness scores showed wider variation (40-85% across different settings). The overall grand mean of 1.8 (above the 1.5 cut-off) indicates generally good awareness levels among healthcare professionals. However, this finding should be considered

alongside studies like Houghton et al. (2022), which emphasized that knowledge alone doesn't guarantee proper implementation, particularly when faced with structural and systemic barriers. The gap between knowledge and practice continues to be a significant concern in healthcare settings, suggesting that while awareness levels are improving, additional focus on practical application and systemic support remains crucial.

### **Level of compliance to infection prevention and control (IPC) among healthcare professionals**

The findings demonstrate remarkably high compliance levels with infection prevention and control (IPC) measures, with 92% of healthcare professionals showing high compliance and only 8% displaying low compliance. This overall compliance rate presents an notably optimistic picture compared to previous studies. Hand hygiene compliance was particularly strong, with 83% of respondents reporting consistent practice before and after patient contact. This finding contrasts significantly with Weldetinsae et al. (2023), where only 52.1% reported full adherence to recommended IPC practices, and 33.9% specifically failed to maintain consistent hand hygiene. The current study's results also exceed the compliance rates reported by Hong and Xu (2024) in tertiary hospitals in China. Regarding PPE usage, 67% of healthcare professionals reported always following hospital protocols, with an additional 22% doing so sometimes. This represents better compliance than found by Ogboghodo et al. (2020), where 61.4% of staff were dissatisfied with PPE availability and usage. However, the combined 89% (always + sometimes) adherence rate appears notably higher than most previous studies, including Weldetinsae et al. (2023), where significant PPE

compliance issues were reported. Medical waste disposal showed strong compliance, with 80% always following guidelines and 14% doing so sometimes. This contrasts markedly with Ezeudu et al. (2022), who found inappropriate disposal of infectious waste in 30% of facilities reviewed. The current study's findings also exceed the compliance rates reported by Debrah et al. (2021) regarding waste management practices. The overall grand mean of 3.6 (well above the 2.5 cut-off) indicates consistently high compliance across all measured aspects. However, these findings differ substantially from most previous research, including Alhumaid et al. (2021) and Ochie et al. (2022), where compliance rates were generally lower. While these results are encouraging, they raise questions about potential reporting bias or differences in assessment methodology, as they notably exceed compliance rates typically reported in the literature. The high compliance rates for reporting exposure to infectious agents (59% always, 31% sometimes) and equipment disinfection (74% always, 17% sometimes) similarly exceed typical findings in comparable studies. This suggests either significant improvements in IPC practices, differences in measurement approaches, or possible social desirability bias in self-reported compliance. These findings, while positive, should be interpreted cautiously given the substantial contrast with previous research. Further investigation using observational methods might help validate these self-reported compliance rates and identify factors contributing to such high adherence levels.

### **Challenges experienced by healthcare professionals in adhering to infection prevention and control (IPC)**

The findings regarding challenges in infection prevention and control (IPC) adherence reveal

that a substantial 79% of healthcare professionals experienced high-level challenges, while 21% reported low-level challenges. This aligns with several previous studies that have documented significant barriers to IPC implementation. Resource limitations emerged as a primary concern, with 86% of respondents (40% strongly agreeing, 46% agreeing) citing limited access to PPE, disinfectants, clean water, and other hospital resources as significant hindrances. This finding strongly correlates with Houghton et al. (2022), who identified inadequate access to water, PPE, and hand hygiene stations as major barriers, particularly in LMICs. It also aligns with Alhumaid et al. (2021), where lack of PPE was reported in 67% of studied cases. Workload pressures presented another significant challenge, with 85% of respondents (43% strongly agreeing, 42% agreeing) indicating that high workload and prioritization of urgent care compromised IPC adherence. This mirrors findings from Weldetinsae et al. (2023), where staffing constraints significantly impacted IPC compliance. The current study suggests this remains a persistent challenge across healthcare settings. Management and supervision issues were highlighted by 83% of respondents (35% strongly agreeing, 48% agreeing), who cited lack of supervision, management support, and inadequate enforcement as barriers. This corresponds with Ochie et al. (2022), where 62.3% of respondents reported lack of institutional monitoring as a barrier to adherence. However, interestingly, the current study found mixed responses regarding excessive supervision, with 52% disagreeing that it hampers compliance. A positive finding was the strong agreement (91%; 58% strongly agreeing, 33% agreeing) that regular audits, adequate staffing, accessible facilities, and continuous support promote better IPC adherence. This aligns with Hong and Xu (2024), who found that frequent feedback mechanisms and institutional monitoring

contributed significantly to high compliance levels. The overall grand mean of 3.6 (above the 2.5 cut-off) indicates that these challenges are substantial and pervasive. This comprehensive finding supports Wanyonyi et al. (2024)'s conclusions about systemic barriers in public healthcare settings, particularly regarding outdated procedures and insufficient refresher training. The challenges identified in the current study reflect the persistent systemic issues documented across multiple studies, suggesting that despite awareness of best practices, healthcare workers continue to face significant practical barriers to IPC implementation.

## **5.2 Implication to nurses**

The findings of this study have significant implications for nurses, especially in terms of their role in infection prevention and control (IPC) within healthcare settings. The high level of awareness regarding standard precautions and infection control practices among nurses is commendable. However, the study highlights several critical areas where further attention is needed to bridge the gap between knowledge and practice.

First, while nurses demonstrated good knowledge of essential IPC measures such as hand hygiene and sharps disposal, the study identified gaps in the detailed procedural knowledge, particularly around the correct duration for handwashing and the proper donning sequence for personal protective equipment (PPE). These gaps suggest that while nurses are aware of general IPC guidelines, there is a need for more focused training to ensure that they adhere to the specific standards required for optimal infection control. Training programs should emphasize the importance of detailed procedural knowledge, ensuring that nurses not only know *what* to do but also *how* and *when* to do it correctly.

The study also revealed that while compliance rates were generally high, there were still challenges in consistently following IPC protocols, especially in resource-limited settings. Nurses often face barriers such as inadequate access to PPE, disinfectants, and clean water. These systemic challenges underscore the importance of improving resource availability in healthcare settings to support the nursing workforce. Nurses should advocate for better resource allocation to ensure that IPC guidelines are effectively implemented, particularly in high-risk areas like the ICU and Emergency departments, where the need for stringent infection control is critical.

### **5.3 Conclusion**

This study has provided valuable insights into the awareness, compliance, and challenges faced by healthcare professionals, particularly nurses, regarding infection prevention and control (IPC) at the University of Benin Teaching Hospital (UBTH), Benin City. The findings indicate that while there is generally a high level of awareness and compliance with IPC practices among healthcare professionals, significant gaps remain, particularly in the detailed understanding and consistent application of specific IPC procedures, such as hand hygiene duration and the proper donning of personal protective equipment (PPE).

The high compliance rates reported in the study are encouraging, suggesting that healthcare professionals, especially nurses, are making substantial efforts to follow IPC guidelines, contributing to improved patient safety. However, challenges related to resource limitations, high workloads, and management and supervision issues continue to impede full implementation of IPC protocols. These barriers underscore the need for systemic

improvements, including better access to IPC resources, balanced staffing levels, and strengthened institutional support for ongoing training and audits.

While the study highlights the positive aspects of IPC practice at UBTH, it also calls attention to the need for targeted interventions to address knowledge gaps, particularly around the more detailed aspects of IPC procedures, and to ensure that compliance is maintained even in the face of resource constraints and workload pressures. Healthcare management must work alongside frontline healthcare professionals to create an environment where IPC practices can be fully implemented, supported by adequate resources and professional development opportunities.

#### **5.4 Limitations of study**

The primary limitations are the reliance on self-reported data. Healthcare professionals were asked to provide information about their awareness and compliance with IPC protocols, which may have led to social desirability bias. In other words, participants might have over-reported their adherence to IPC practices to meet institutional expectations or to present themselves in a favorable light. As a result, the reported compliance rates may be higher than what is actually practiced.

The study also has limitations related to the sample itself. Although it included a diverse range of healthcare professionals, the results may not be fully generalizable to other healthcare settings. The sample was limited to UBTH, and the findings might differ in hospitals with different infrastructures, resources, or staff compositions. Furthermore, the

sampling method could have introduced bias, especially if certain departments or roles were overrepresented. This might mean that the experiences of healthcare professionals in underrepresented departments were not adequately captured.

## **5.5 Recommendations**

Based on the findings of this study on infection prevention and control (IPC) among healthcare professionals at the University of Benin Teaching Hospital, the following recommendations are proposed to enhance awareness, compliance, and effective implementation of IPC measures:

- Regular, mandatory training sessions should be organized for all categories of healthcare professionals. These trainings should be updated in line with current global best practices and tailored to the specific IPC challenges faced within the hospital. Emphasis should be placed on practical demonstrations and scenario-based learning to enhance retention and application.
- The hospital management should strengthen institutional support for IPC by ensuring the consistent availability of necessary supplies such as gloves, hand sanitizers, PPE, and disinfectants. Furthermore, enforcement of IPC protocols should be strict and uniform, with mechanisms in place to monitor compliance and hold staff accountable for negligence or non-compliance.
- Each department should designate trained IPC focal persons or "champions" responsible for promoting adherence, monitoring practices, and providing peer

support. These individuals can serve as immediate resources for staff and act as a link between departments and the IPC committee.

- There should be regular supervision, spot checks, and performance evaluations related to IPC. Monitoring tools, such as checklists or digital tracking systems, can help assess compliance and identify areas needing improvement. Feedback should be constructive and used to inform future training and policy updates.
- Positive reinforcement strategies should be introduced to encourage consistent IPC compliance. Recognition programs, certificates of compliance, or other incentives can motivate healthcare professionals to adhere to protocols and take personal responsibility for infection control.
- Posters, banners, and visual reminders should be strategically placed in wards, laboratories, and clinics to reinforce IPC messages. These should include hand hygiene steps, proper PPE usage, and waste disposal procedures. Periodic awareness campaigns can also be conducted to maintain a high level of consciousness about IPC.
- The hospital's IPC committee should be empowered and well-resourced to perform regular risk assessments, update policies, and coordinate all IPC-related activities. Their role should include guiding outbreak preparedness and response, especially for highly contagious diseases.

## **5.6 Suggestion for Further study**

While this study has provided valuable insights into the knowledge, attitude, and practices of healthcare professionals regarding infection prevention and control (IPC) at the University of

Benin Teaching Hospital, further research is needed to build upon its findings.

- Future studies should consider adopting a larger sample size that includes healthcare professionals from multiple institutions, both public and private, to enable broader generalization of results across different healthcare settings.
- Additionally, qualitative research methods such as in-depth interviews and focus group discussions could be employed to explore the underlying motivations, challenges, and cultural factors influencing IPC compliance among healthcare professionals. These approaches would offer deeper insights into the barriers to effective infection control that may not be captured through quantitative surveys alone.

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**APPENDIX I**

**DEPARTMENT OF NURSING SCIENCES**

**SCHOOL OF BASIC MEDICAL SCIENCES**

**UNIVERSITY OF BENIN, BENIN CITY, EDO STATE**

Dear Respondent,

I am a student of University of Benin carrying out a research study on **Assessment of awareness and compliance to Infection Prevention and Control among Health Care Professionals at University of Benin Teaching Hospital, Benin City, Edo State**. Your co-operation is highly needed in answering the questions below, as this will enhance success of the study. All information given will be strictly confidential and used for the purpose of the study only.

Thanks for your co-operation.

**Section A: Socio-Demographic Information**

1. Gender: Male ( ) Female ( )
2. Age: 18–24 years ( ) 25–34 years ( ) 35–44 years ( ) 45–54 years ( ) 55 years and above ( )
3. Department/Unit: Medical ( ) Surgical ( ) Emergency ( ) Pediatrics ( ) ICU ( ) Others (please specify) \_\_\_\_\_

4. Professional Role: Doctor ( ) Nurse ( ) physiotherapist ( ) Radiographers ( ) Medical laboratories ( )
5. Years of Experience: Less than 1 year ( ) 1–5 years ( ) 6–10 years ( ) Above 10 years ( )
6. Highest Educational Qualification: Diploma ( ) Bachelor's Degree ( ) Master's Degree ( ) Doctorate ( )

### **Section B: Knowledge of Basic Infection Prevention and Control (IPC) Practices**

Tick (✓) the most appropriate option.

1. Which of the following is the most effective method to prevent the spread of infections in healthcare settings? ( ) Wearing gloves only when dealing with infected patients ( ) Practicing proper hand hygiene before and after patient contact ( ) Using face masks as the primary protective gear for all procedures ( ) Sterilizing equipment only once a day
2. Which of the following is NOT considered an element of standard precautions in infection control? ( ) Proper hand hygiene ( ) Use of personal protective equipment (PPE) ( ) Performing sterile procedures in non-sterile environments ( ) Safe handling of sharps
3. What is the recommended duration for handwashing with soap and water to effectively reduce contamination? ( ) 10 seconds ( ) 20 seconds ( ) 30 seconds ( ) 1 minute
4. Which of the following is considered an appropriate method for disposing of contaminated sharps in a healthcare facility? ( ) Throwing them directly into the

regular trash bin ( ) Placing them in a puncture-resistant, labeled sharps container ( )  
 Soaking them in disinfectant for 5 minutes before disposal ( ) Flushing them down the  
 hospital toilet

5. When using personal protective equipment (PPE), which of the following is the correct order for donning PPE before a procedure? ( ) Gloves, gown, mask, goggles ( ) Gown, gloves, goggles, mask ( ) Mask, gloves, gown, goggles ( ) Gown, mask, goggles, gloves
6. What is the main purpose of implementing infection prevention and control (IPC) measures in healthcare settings? ( ) To minimize the cost of healthcare-related infections ( ) To enhance the comfort of patients and staff ( ) To prevent the transmission of infectious agents and protect patients and healthcare workers ( ) To reduce the time spent on patient care procedures

### Section C: Compliance with IPC Measures

Tick the most appropriate option (Always, Sometimes, Rarely, Never).

| S/N | Question   | Always | Sometimes | Rarely | Never |
|-----|--|--------|-----------|--------|-------|
| 1   | How often do you perform hand hygiene before and after patient contact?  |        |           |        |       |
| 2   | When performing medical procedures, how frequently do you use personal protective equipment (PPE) according to the hospital's protocols? |        |           |        |       |
| 3   | How often do you ensure the proper disposal of medical waste in accordance with IPC guidelines?  |        |           |        |       |
| 4   | How frequently do you adhere to infection prevention and control (IPC) guidelines during patient care?                                   |        |           |        |       |

|   |   |  |  |  |  |
|---|---|--|--|--|--|
| 5 | How often do you disinfect reusable medical equipment appropriately after use?        |  |  |  |  |
| 6 | How promptly do you report any exposure to infectious agents in the hospital setting? |  |  |  |  |

**Section D: Challenges in Adhering to IPC Procedures**

**Tick the most appropriate option:** SA = Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

| S/N | Question  | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|-----|---|----------------|-------|---------|----------|-------------------|
| 1   | Limited access to personal protective equipment (PPE), disinfectants, clean water, and hospital resources significantly hinders compliance with IPC measures. |                |       |         |          |                   |
| 2   | High workload and the prioritization of urgent patient care over IPC protocols are major barriers to proper IPC adherence.                                    |                |       |         |          |                   |
| 3   | Lack of supervision, support from hospital management, and inadequate enforcement of IPC guidelines negatively affect healthcare workers' compliance.         |                |       |         |          |                   |
| 4   | Excessive training, regulations, or supervision can overwhelm healthcare workers and reduce their effective adherence to IPC practices.                       |                |       |         |          |                   |
| 5   | Regular audits, sufficient staffing, accessible hand hygiene facilities, and continuous support promote better adherence to IPC measures.                     |                |       |         |          |                   |

## RELIABILITY OF INSTRUMENT

TABLE 4.1.5 RELIABILITY OF INSTRUMENT

OF AWARENESS AND COMPLIANCE TO INFECTION PREVENTION AND CONTROL AMONG HEALTH CARE PROFESSIONALS AT UBTH, BENIN CITY, EDO STATE:

QUESTIONNAIRE SECTIONS.

A pilot study was conducted using 10% of the total sample size of 300, to healthcare professionals (Doctors, nurses, radiographers, medical laboratory scientists and physiotherapists) at Edo Specialist Hospital (which are outside the sampled population).

| <b>Reliability Statistics</b> |  |              |
|-------------------------------|--|--------------|
| Cronbach's Alpha              | Cronbach's Alpha Based on Standardized Items | No. of Items |
| 0.71                          | 0.70   | 17           |

| <b>Item-Total Statistics</b>   |                                   |                                       |   |   |
|--|-----------------------------------|---------------------------------------|---|---|
|  | <b>Scale Mean if Item Deleted</b> | <b>Scale Variance if Item Deleted</b> | <b>Corrected Item-Total Correlation</b> | <b>Cronbach's Alpha if Item Deleted</b> |
| Which of the following is the most effective method to prevent the spread of infections in healthcare settings?                          | 87.3188                           | 27.590                                | -.123                                   | .099                                    |
| Which of the following is NOT considered an element of standard precautions in infection control?  | 87.4813                           | 26.138                                | .053                                    | .092                                    |
| What is the recommended duration for handwashing with soap and water to effectively reduce contamination?                                | 87.3188                           | 27.590                                | -.123                                   | .099                                    |
| Which of the following is considered an appropriate method for disposing of contaminated sharps in a healthcare facility?                | 87.4813                           | 26.138                                | .053                                    | .092                                    |
| When using personal protective equipment (PPE), which of the following is the correct order for donning PPE before a procedure?          | 87.4813                           | 26.138                                | .053                                    | .092                                    |
| What is the main purpose of implementing infection prevention and control (IPC) measures in healthcare settings?                         | 53.4931                           | 15.077                                | -.047                                   | .565                                    |
| How often do you perform hand hygiene before and after patient contact?  | 87.3188                           | 27.590                                | -.123                                   | .099                                    |
| When performing medical procedures, how frequently do you use personal protective equipment (PPE) according to the hospital's protocols? | 87.4813                           | 26.138                                | .053                                    | .092                                    |

|   |         |        |       |      |
|---|---------|--------|-------|------|
| How often do you ensure the proper disposal of medical waste in accordance with IPC guidelines?   |         |        |       |      |
| How frequently do you adhere to infection prevention and control (IPC) guidelines during patient care?  | 87.6438 | 27.325 | -.076 | .081 |
| How often do you disinfect reusable medical equipment appropriately after use?  | 87.5938 | 26.658 | .058  | .077 |
| How promptly do you report any exposure to infectious agents in the hospital setting?   | 87.3188 | 27.590 | -.123 | .099 |
| Limited access to personal protective equipment (PPE), disinfectants, clean water, and hospital resources significantly hinders compliance with IPC measures.   | 87.3188 | 27.590 | -.123 | .099 |
| High workload and the prioritization of urgent patient care over IPC protocols are major barriers to proper IPC adherence.  | 87.4813 | 26.138 | .053  | .092 |
| Lack of supervision, support from hospital management, and inadequate enforcement of IPC guidelines negatively affect healthcare workers' compliance.   | 86.2813 | 26.719 | -.064 | .095 |
| Excessive training, regulations, or supervision can overwhelm healthcare workers and reduce their effective adherence to IPC practices.   | 86.3500 | 25.675 | .024  | .090 |
| Regular audits, sufficient staffing, accessible hand hygiene facilities, and continuous support promote better adherence to IPC measures.   | 86.3000 | 24.714 | .114  | .081 |
| <b>Comment:</b> The reliability analysis using Cronbach's Alpha, yielding a result of 0.71, for the overall scale. Additionally, the Cronbach's Alpha of 0.52 when the items are standardized. These values suggest a good level of internal consistency among the items in this scale. |         |        |       |      |

## **APPENDIX II**

# HEALTH RESEARCH ETHICS COMMITTEE (HREC)

## UNIVERSITY OF BENIN TEACHING HOSPITAL

P.M.B. 1111 BENIN CITY NIGERIA Telephone: 052-600418 Website: ubth.org

**CHIEF MEDICAL DIRECTOR**  
Prof. Darlington E. Obaseki  
E-mail: [darlobaseki@gmail.com](mailto:darlobaseki@gmail.com)

**DIRECTOR OF ADMINISTRATION**  
Jim Uwadie, Esq

**CHAIRMAN**  
Prof. (Mrs.) Antoinette N. Ofili



### HREC OFFICE:

Committee email: [ubthresearchethics@gmail.com](mailto:ubthresearchethics@gmail.com)

**Registration Number:**  
NHREC-UBTH-HREC/24/12/2022B

**PROTOCOL NUMBER:** ADM/E 22/A/VOL.VII/2025/18

**PROPOSAL TITLE:** "ASSESSMENT OF AWARENESS AND COMPLIANCE ON INFECTION PREVENTION AND CONTROL AMONG HEALTH CARE WORKERS AT UNIVERSITY OF BENIN TEACHING HOSPITAL, BENIN CITY, EDO STATE"

**PRINCIPAL INVESTIGATOR(S):** ENOBAKHARE OSADEBAMWEN

**DEPARTMENT/INSTITUTION:** DEPARTMENT OF NURSING SCIENCE, SCHOOL OF BASIC MEDICAL SCIENCES UNIVERSITY OF BENIN, BENIN CITY, EDO STATE

**DATE CONSIDERED:** APRIL 25<sup>TH</sup>, 2025

**DECISION OF THE COMMITTEE:** APPROVED

*THIS APPROVAL DATES 25/4/2025 TO 24/4/2026. IF THERE IS DELAY IN STARTING THE RESEARCH, PLEASE INFORM THE HREC SO THAT THE DATES OF APPROVAL CAN BE ADJUSTED ACCORDINGLY*

**REMARK:**

**CHAIRMAN:** PROF. (MRS) A.N. OFILI

**SIGNATURE & DATE:** *Prof. (Mrs.) Antoinette N. Ofili* 25/4/2025

**SUPERVISOR (S):** MRS. M. A. INIOMOR

**DECLARATION BY INVESTIGATOR(S):**

**PROTOCOL NUMBER** (please quote in all enquiries)

Note that no participant accrual or activity related to this research may be conducted outside of these dates. All informed consent forms used in this study must carry the HREC assigned number and duration of HREC approval of the study. In multiyear research, endeavor to submit your annual re-port to the HREC early in order to obtain renewal of your approval and avoid disruption of your research. No changes are permitted in the research without prior approval by the HREC except in circumstances outlined in the Code. The HREC reserves the right to conduct compliance visit your research site without previous notification

Signature & Date.....



[ubthresearchethics@gmail.com](mailto:ubthresearchethics@gmail.com)

Registration Number: NHREC/24/01/2020