

Health Workers in Biu General Hospital, Borno State

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ABSTRACT

This descriptive, non-experimental study assessed the level of knowledge and identified factors influencing adherence to standard precautions among health workers at Biu General Hospital, Borno State. Additionally, the study aimed to highlight the importance of compliance with standard precautions. A cross-sectional descriptive design was employed, and self-administered questionnaires were distributed to health workers.

Materials and Methods: This was a descriptive cross-sectional study. Self-administered questionnaires were distributed to health workers at Biu General Hospital.

Results: Of the 167 questionnaires distributed, 145 were returned, yielding a response rate of 86.8%. Respondents represented most hospital departments, ensuring comprehensive inclusion of wards in the study.

Demographic analysis indicated that most respondents had 1-5 years of experience, while the fewest had 11-14 years. These characteristics suggest the sample is appropriate and support the validity of the findings.

Keywords: practice, compliance, standard precautions, blood-borne infections, nosocomial infections, occupational hazards, needle-stick injury.

INTRODUCTION

Background To The Study

All healthcare professionals are exposed to various infections while working in hospitals, particularly when using sharp objects. Contact with body fluids containing high concentrations of human immunodeficiency virus (HIV), hepatitis B, and hepatitis C viruses entails a significant risk.

All healthcare workers are at risk of workplace accidents and exposure to potentially contaminated biological materials due to the nature of their direct care activities. This includes frequent and prolonged handling of needles and other sharp objects, as well as daily contact with potentially contaminated items during cleaning, disinfection, sterilisation, sample handling, and laboratory testing (Portoa and Marziale, 2016).

Furthermore, hospitals are not only places for patient care and recovery, but also places where healthy individuals may be exposed to infectious agents through contact with blood and other body fluids during work or visits. Health workers in direct contact with patients are at high risk of needle-stick injuries due to poor technique, inexperience, and insufficient knowledge or practice of standard precautions. Studies indicate that needle-stick injuries, splashes of blood or other body fluids into the eyes, nose, or mouth, or contact with non-intact skin are the most common modes of occupational exposure (Chaudhuri, Baidiya, and Singh, 2016).

In 2003, WHO estimated that 3 million needlestick injuries occur annually among medical workers worldwide.

Standard precautions are designed to reduce the risk of transmission of blood-borne diseases and other pathogens from both recognised and unrecognised sources. They represent the minimum level of infection control precautions used in the care of all patients (WHO, 2007).

This finding indicates that implementing standard precautions can significantly reduce the transmission of infections in healthcare settings. Standard precautions aim to prevent healthcare workers from exposure to blood and body fluids through basic infection control measures, including hand hygiene. Hand hygiene is an essential component, alongside the use of protective barriers such as gloves, masks, gowns, and goggles, as well as the safe handling of needles. Despite the straightforward nature of these guidelines, compliance among health workers remains low. High rates of occupational exposure have been reported, with many cases remaining undetected.

Accordingly, this study examines non-compliance with standard preventive measures among medical workers at Biu General Hospital.

Statement of Research Problem

Biu General Hospital is one of the largest health facilities in Southern Borno. Undocumented data indicate that patients experience longer hospital stays due to nosocomial infections, and workers are exposed to occupational risks, including contact with blood. Lack of knowledge and noncompliance with standard precautions place healthcare workers at significant risk. Therefore, a study of this nature is warranted.

The research problem can be summarised as: Do health workers practice standard precautions?

Research Questions

1. What is the health workers' level of knowledge towards the practice of standard precautions?
2. Do health workers practice standard precautions in the hospital?
3. What are the factors influencing standard precautions among the health workers?

Objectives of The Study

To address the problem of this study, the following objectives were established:

To assess the level of knowledge, practice, and factors influencing adherence to standard precautions among health workers in Biu General Hospital, Borno State.

Importance of The Study

The practice of standard precautions in hospitals prevents infections among health workers and protects both staff and patients. This study provides insights to promote strict compliance with standard precautions among health workers at Biu General Hospital.

Scope of The Study

This study is limited to nurses and other health workers at Biu General Hospital in Borno State, comprising a total of 258 staff members.

Limitation of The Study: Due to time constraints, compliance assessment relied on respondents' self-reported practices rather than direct observation. Consequently, reported adherence to standard precautions may be influenced by response and social desirability biases. This limitation should be considered when interpreting the results. Data were collected using a questionnaire.

LITERATURE REVIEW

Introduction

This chapter reviews the literature relevant to the case study given and offers a critical appraisal of prior research on health workers' knowledge and practice of standard precautions. It expands upon the study's conceptual framework, presents an empirical review of related literature, and concludes with a summary of key findings.

Conceptual Review

Standard precautions are universal work practices applied to all individuals, regardless of perceived or confirmed infectious status, to ensure a basic level of infection prevention and control. Implementing standard precautions as a primary measure in healthcare settings helps minimise the risk of person-to-person transmission of infectious agents, even in high-risk scenarios (NHMRC).

Standard precautions represent the minimum level of infection control required when caring for all patients. They are designed to reduce the risk of transmission of blood-borne and other pathogens from both recognised and unrecognised sources (WHO, 2003). These practices are grounded in evidence-based guidelines published by the Centres for Disease Control and Prevention (CDC) in 1996 and updated in 2007, which serve to prevent the transmission of infectious diseases in healthcare settings (Siegel, Rhinehart, Jackson, & Chiarello, 2007).

Standard precautions are central in reducing the incidence of nosocomial infections. As such, nurses and other healthcare personnel should have a thorough understanding of these measures before engaging in clinical practice (CDC, 2007). The World Health Organisation (WHO, 2007) underscores that these precautions are the fundamental level of infection control and must be applied universally in patient care. Consequently, healthcare professionals must adhere to these precautions to prevent hospital-acquired infections (Mukherjees, Bhattacharyya, & Sharmaharka, 2013).

A study conducted at Central Hospital, Benin City, Nigeria, revealed that knowledge and practice of standard precautions among midwives and nurses were suboptimal; notably, only 34.2% of nurses were aware of standard precautions (Ofili, Asuzu, & Okojie, 2003).

According to the Centres for Disease Control and Prevention (CDC, 2007), standard precautions require that health workers should:

1. Assume that every person is potentially infected with an organism that could be transmitted in the health care setting.
2. Apply a set of work practices to blood, all body fluids (except sweat), mucous membranes, and non-intact skin, including:

- Hand hygiene
- Use of individual protective equipment
- Management of spillages of blood and body fluids
- Appropriate patient placement
- Management of sharps
- Safe injection practices (e.g., using sterile needles and syringes for each patient)
- Respiratory hygiene and cough etiquette
- Management of needle stick injuries
- Management of waste
- Management of laundry
- Decontamination of reusable medical equipment
- Decontamination of the environment

A study conducted in Abuja, Nigeria, assessing knowledge and practice of standard precautions, found that only 22.38% of participants recognised that standard precautions required handwashing, while 68.95% reported always washing their hands. Furthermore, 11.86% always recapped needles, 88.44% used goggles and gowns when collecting blood and other body fluids, and 99.83% reported regular use of gloves (Okechukwu & Motshedisi, 2012).

Historical Overview of Standard Precautions

According to Infection Control Today (2002), the origins of standard precautions can be traced back to 1877, when patients with infectious diseases were quarantined in specialised hospitals. Patients with the same type of infectious disease were grouped in separate rooms, indicating the start of isolation practices and the cohort concept. These early observations and interventions by healthcare professionals helped manage the spread of disease. Over time, this led to the advancement of more advanced preventive techniques, including aseptic nursing procedures, which further reduced the transmission of infectious diseases.

By 1910, the cubicle system—placing infected patients in multi-bed wards—was introduced, encouraging the use of gowns for barrier protection and establishing the practices of handwashing and disinfection after patient contact. During the 1950s, amid outbreaks of *Staphylococcus*, patients were isolated in specialised rooms, now known as isolation wards. By the 1960s, many designated infectious disease and tuberculosis hospitals had closed (Bjerke, 2003). In 1983, the CDC disseminated Guidelines for Isolation Precautions in Hospitals as a document on the control of infectious diseases. This document included a section on precautions to take when handling the blood and body fluids of suspected patients infected with a bloodborne pathogen (CDC, 2001). It designated seven isolation categories: strict isolation, respiratory isolation, contact isolation, tuberculosis isolation, enteric precautions, drainage/secretion precautions and blood/body fluid precautions (Bjerke, 2003).

In 1985, the CDC introduced the concept of Universal Precautions in response to the HIV/AIDS epidemic (CDC, 2007). These precautions were developed to be applied to all patients, regardless of their blood-borne infection status. Universal Precautions are defined as "a set of measures devised to prevent and minimise the accidental transmission of all known blood-borne pathogens—including HIV, hepatitis B, and hepatitis C viruses—to or from healthcare personnel during the provision of first aid or other healthcare services" (CDC, 2007; Vaz et al., 2010).

In 1987, the concept of Body Substance Isolation (BSI) was introduced. BSI expanded infection control practices by considering all moist body substances—except sweat—as potentially infectious, supporting the use of gloves when anticipating contact with these substances (Bjerke, 2003). Unlike Universal Precautions, which focused on blood, BSI emphasised that all excreta and secretions could transmit infections (Vaz et al., 2010). The approach primarily relied on glove use, recommending clean gloves before contact with mucous membranes or moist substances, and in some early guidance, suggested that handwashing was not always necessary after glove removal (CDC, 2007; Vaz et al., 2010).

The term "standard precautions" (SP) was introduced in the CDC's 1996 revision of the isolation guidelines. These recommendations clarified that SP is a synthesis of Universal Precautions (UP) and Body Substance Isolation (BSI), and should be applied to all patients, regardless of diagnosis or presumed infection status (Bjerke, 2003). Standard Precautions have since replaced Universal Precautions and are defined as "a group of infection prevention practices that apply to all patients, regardless of suspected or confirmed diagnosis or infection status" (CDC, 2012).

Current Trends of Standard Precautions

According to the World Health Organisation (WHO, 2007), the key elements of standard precautions are;

1. Hand hygiene

- Hand washing (40–60 sec): wet hands and apply soap; rub all surfaces; rinse hands and dry thoroughly with a single-use towel; use a towel to turn off the faucet.

- Hand rubbing (20–30 sec): apply enough product to cover all areas of the hands; rub hands until dry.

Summary indications:

- Before and after any direct patient contact and between patients, whether gloves are worn.
- Immediately after gloves are removed.
- Before handling an invasive device.
- After touching blood, body fluids, secretions, excretions, non-intact skin, and contaminated items, even if gloves are worn.
- During patient care, when moving from a contaminated to a clean body site of the patient.
- After contact with inanimate objects near the patient.

2. Gloves

- Wear when touching blood, body fluids, secretions, excretions, mucous membranes, and non-intact skin.
- Change between tasks and procedures on the same patient after contact with potentially infectious material.
- Remove after use, before touching non-contaminated items and surfaces, and before going to another patient. Perform hand hygiene immediately after removal.

3. Facial Protection (eyes, nose, and mouth)

- a surgical or procedure mask and eye protection (eye visor, goggles) or
- a face shield to protect mucous membranes of the eyes, nose, and mouth during activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions.

4. Gown

- Wear to protect skin and prevent soiling of clothing during activities that are likely to generate splashes or sprays of blood, body fluids, secretions, or excretions.
- Remove soiled gown as soon as possible and perform hand hygiene.

5. Prevention of needle sticks and injuries from other sharp instruments

Use care when:

- Handling needles, scalpels, and other sharp instruments or devices.
- Cleaning used instruments.
- Disposing of used needles and other sharp instruments.

6. Respiratory hygiene and cough etiquette

Persons with respiratory symptoms should apply source control measures:

- Cover their nose and mouth when coughing/sneezing with a tissue or mask, dispose of used tissues and masks and perform hand hygiene after contact with respiratory secretions.

Health-care facilities should:

- Place acute febrile respiratory symptomatic patients at least 1 metre (3 feet) away from others in common waiting areas, if possible.
- Post visual alerts at the entrance to healthcare facilities instructing persons with respiratory symptoms to practice respiratory hygiene/cough etiquette.
- Consider making hand hygiene resources, tissues and masks available in common areas and areas used for the evaluation of patients with respiratory illnesses.

7. Environmental cleaning

- Use adequate procedures for the routine cleaning and disinfection of environmental and other frequently touched surfaces.

8. Linen handling, transport, and processing of used linen in a manner which:

- Prevents skin and mucous membrane exposures and contamination of clothing
- Avoids transfer of pathogens to other patients and/or the environment.

9. Waste disposal

- Ensure safe waste management.
- Treat waste contaminated with blood, body fluids, secretions and excretions as clinical waste, following local rules and regulations.
- Human tissues and laboratory waste that is directly associated with specimen processing should also be treated as clinical waste.
- Discard single-use items properly.

10. Patient care equipment

- Handle equipment soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and transfer of pathogens to other patients or the environment.
- Clean, disinfect, and reprocess reusable equipment appropriately before use with another patient. Health-care facility recommendations for standard precautions key elements at a glance

Factors Influencing The Practice Of Standard Precautions

Numerous factors influence health workers' compliance with standard precaution measures, including inadequate knowledge and insufficient training. Research indicates that compliance tends to be higher among workers in surgical departments compared to those in other hospital units. For example, Ofili, Asuzu, and Okojie (2003) found that multiple factors contributed to non-compliance with standard precautions among health workers, as previously described.

Additionally, Adinma, Ezeama, Adina, and Asuzu (Journal of Clinical) identified numerous factors influencing non-adherence to preventive measures for professionals. These include lack of access to personal protective equipment (PPE), carelessness, inadequate informational materials on standard precautions, low perceived risk of bloodborne pathogens, time constraints, diminished technical competence in using PPE, and uncooperative patients. A comprehensive study in North-Eastern Nigeria reported that hand hygiene compliance was only

38.7% among health workers who were knowledgeable about the precautions, highlighting a strong need for behaviour change (Abdulraheem et al., 2012).

Moreover, nonadherence behaviours have also been linked to unfavourable working environments, including inadequate staffing and poor management practices.

Sadoh, Fawole, Sadoh, Oladimeji, and Soliloye (2006) further noted that personal factors influencing adherence include self-efficacy, beliefs about standard precautions and diseases, knowledge of standard precautions, and attitudes towards adherence. Other studies have consistently shown that health workers' knowledge levels substantially affect adherence to standard precautions, rendering knowledge a critical factor in compliance.

However, several researchers—including Reda, Fisseha, and Mengistie Vandeweend (2010), Sadoh et al. (2006), Luo, He, Zhou, and Luo (2010), Brevideilli and Cianciarullo (2009), and Askarian et al. (2007)—have observed that compliance with standard precautions may fluctuate in the absence of an enabling environment, such as the lack of reliable running water or shortages of individual protective equipment. Such environmental issues are especially prevalent in resource-constrained settings.

Other scholars have identified additional contributors to nonadherence, including inadequate knowledge, forgetfulness, excessive workload, an unsupportive workplace safety climate, and the perception that colleagues do not comply with standard precautions.

Empirical Review

Garcia Zapata, Souza, Guimarães, Tipple, Prado, and Garcia Zapata (2010) investigated the knowledge and practice of standard precautions among nursing and medical students at a teaching hospital in Brazil. Despite awareness that handwashing should occur before and after patient care, 46.2% of nurses and 83.3% of medical students admitted to not washing their hands before and after procedures, even though water and soap were available in 75% of these instances. In civilian hospitals in Karachi, Pakistan, Jawaaid, Iqbal, and Shahbaz (2009) reported inadequate knowledge, attitudes, and observance of standard precautions among physicians. Only 7.5% of doctors were fully aware of CDC guidelines, while 52.5% were unaware and 40% had partial knowledge. Contrastingly, a study at the University Hospital of the West Indies, Jamaica, found that physicians, medical technicians, and nurses demonstrated adequate knowledge and an acceptable level of adherence to standard precautions (Valim, Marziale, Hayashida, & Richart-Martinez, 2014).

In Nigeria, Ofili, Asuzu, and Obi (2003) assessed the knowledge and practice of standard preventive measures by nurses at the Central Hospital in Benin, Edo State, and found that only 34.2% of nurses had heard of standard precautions, and overall adherence was low. Adinma, Asuzu, and Ezeama (2009) evaluated knowledge and practice of universal precautions among homemakers and nurses in tertiary health institutions in southeastern Nigeria, revealing high levels of understanding—97% among doctors and 92% among nurses—though nurses demonstrated higher compliance (75%) compared to doctors (15.2%). Several studies have shown inadequate availability of protective equipment. For example, Sado et al. (2006) showed high compliance among trained nurses in not recapping used needles. Still, only 63.8% of doctors consistently wore personal protective equipment, and 56.2% had never worn protective glasses during childbirth or surgery. Izegebu (2006) found that laboratory personnel in medical schools and teaching hospitals in Lagos State had significant deficiencies in knowledge, attitudes, and compliance with standard preventive measures, frequently underestimating infection risk and neglecting basic protocols.

THEORETICAL REVIEW:

Health Belief Model

Jessica M. Cronce, Mary E. Larimer, in *Interventions for Addiction*, 2013 stated The Health Beliefs Model proposes that individuals will alter their behaviour if they perceive that (1) they are susceptible to a negative health condition resulting from the behaviour, (2) that the condition resulting from the behaviour is

severe, (3) that they possess the requisite resources to prevent or mitigate the condition, and (4) that the benefits of changing their behaviour outweigh the costs.

Garcia-Zapata, Souza, Guimarães, Tipple, Prado, and Garcia-Zapata (2010) supported this perspective, stating that "prompting compliance with standard precaution measures requires behavioural changes." They also noted that the dynamics of such change are intricate and multifaceted, encompassing elements such as education, motivation, and reorganisation of the work environment.

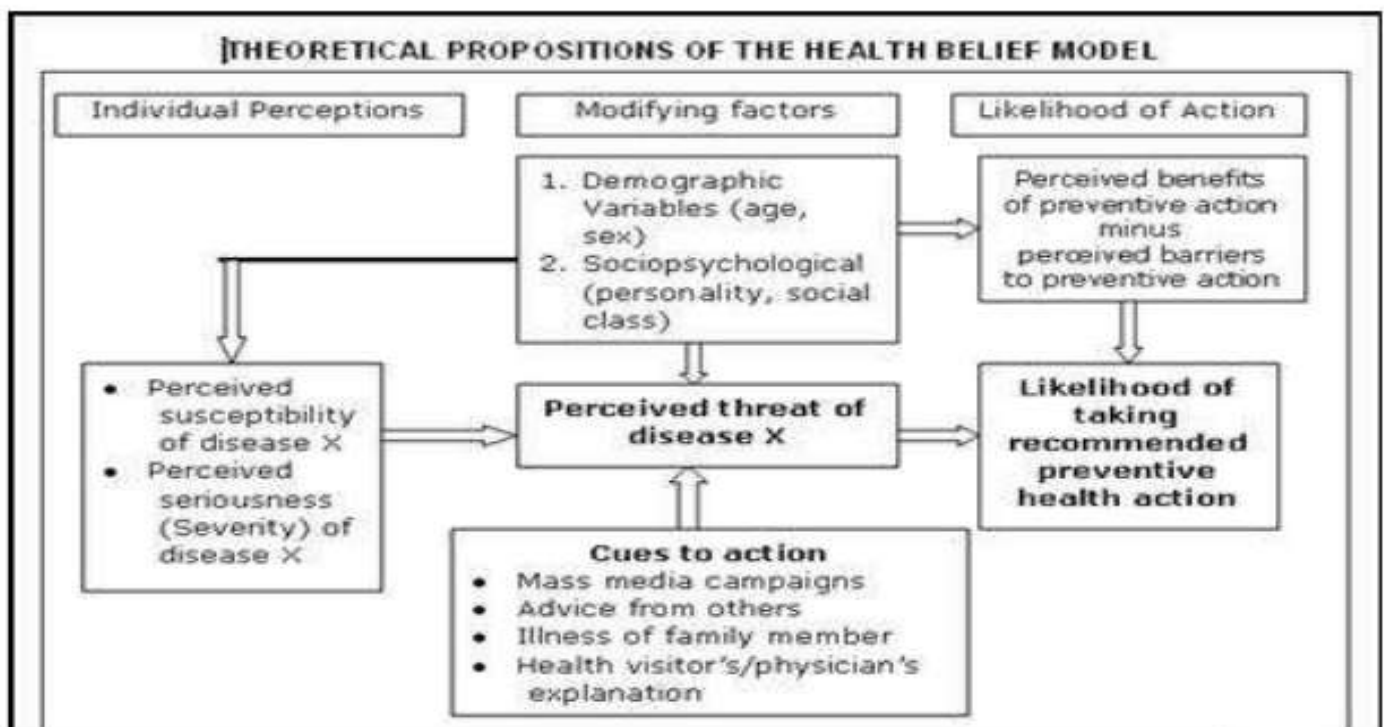
Behaviour theorists recognise that individuals engage in behaviours they believe will help them achieve desired outcomes. For instance, human behaviour can be formed by modelling, as described in social learning theory (Omebe, 2005).

The analysis of health workers' practices is often grounded in the Health Belief Model (HBM), which aims to explain and predict health behaviours (Glanz, Rimer, & Levis, 2002). The HBM is widely regarded as a valuable structure for understanding and promoting health behaviours (Efsthathiou, Papastralou, Raftopoulos, & Merkouris, 2011). It enables researchers to comprehend the different behaviours or attitudes individuals might adopt when deciding whether to follow specific health directives, even under similar conditions.

The Health Belief Model was developed in the 1950s by social psychologists Hochbaum, Rosenstock, Kegels, and Leventhal while working for the U.S. Public Health Service. The model emerged in response to the limited uptake of a free tuberculosis screening program. Since its inception, HBM has been applied to a wide range of health behaviours, both long- and short-term, including those related to sexually transmitted infections and HIV/AIDS (Levis, 1997). The first model comprised four constructs: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers, which together shape an individual's readiness to act. Later additions to the model included self-efficacy and cues to action (Efsthathiou et al., 2011).

Diagram:

Health Belief Model



Application To The Study

In the Health Belief Model, it appears that the seriousness of the infection (perceived defenselessness) reduces the risk of the illness. The level of instruction that accomplishes this, along with indications of the illness, leads to measures determined by media data and other factors, such as social and statistical variables.

The health worker will evaluate his actions based on the benefits to be gained and the obstacles that restrict them. The level of risk perceived by the individual and the benefits of the action will lead to possible changes in behaviour.

Health workers, patients, and other clients participating in health care delivery will only take preventive action and adhere to standard precautions when they believe the disease is serious and life-threatening, the risk of exposure is high, and the standards are met. Standard precaution measures are considered to reduce the risk of infection.

Therefore, their actions will be based on their level of knowledge, the threats they face, the information they have, the availability of protective equipment and the desire to reduce the prevalence of diseases and maintain health and the absence of threats

SUMMARY OF REVIEW RELATED LITERATURE

The literature indicates that standard precautionary measures constitute the essential level of disease control, implemented for all patients. These measures are intended to reduce the transmission of blood-borne and other pathogens from both recognised and unrecognised sources, and to decrease cross-contamination and nosocomial infections between healthcare workers and patients, as well as among patients. The review also emphasised the components of standard precautions and factors influencing non-compliance.

To clarify healthcare workers' attitudes toward the practice of standard precautions, the Health Belief Model was applied. Compliance is influenced by factors such as perceived severity and the life-threatening impact of illness, perceived risk of contracting the illness, and the belief that adherence to standard precautions reduces infection risk.

Previous studies revealed low levels of knowledge, attitudes, and practices among medical workers in various regions and countries. Therefore, this study examines the situation among health workers at Biu General Hospital in Borno State.

INTRODUCTION

This chapter describes the methodology used in this study, detailing the research design, study population, sample size determination, sampling procedures, data collection instruments, and data analysis methods.

Research Design

A descriptive research design was adopted, since it facilitates the assessment of research quality, the evaluation of the significance of findings, and the drawing of valid inferences about the larger population. This approach also supports the effective collection of rich data to address the research questions.

Settings

This study was conducted as a descriptive cross-sectional survey to assess knowledge and practice of standard precautions among health workers at General Hospital, Biu, Borno State.

The hospital, commissioned in 1977 as a 230-bed facility, is located on Gombi Road in Biu Local Government Area (LGA). The Biu community lies in the southern part of Borno State, in northeastern Nigeria. The state capital is Maiduguri, and Yobe State borders Borno to the north, Gombe State to the west, and Adamawa State to the south.

The target population for this study comprised all health workers at Biu General Hospital, totalling 258 individuals—a figure referenced consistently throughout this work for clarity.

Sampling Techniques

Sample Size

The sample size will be determined using the Taro Yamane formula (1976) as follows.

$$n = N / 1 + N \times (e)^2$$

where

n = desired sample size

N = total population

e = error limit (0.05)

$$n = 258 / 1 + 258 \times (0.05)^2$$

$$n = 258 / 1 + 258 \times 0.0025$$

$$n = 167$$

Instrument For Data Collection.

A combination of stratified (layered) and random sampling techniques was used to make certain that all relevant groups of health workers were adequately represented in the study.

Procedure For Data Collection

A self-developed questionnaire served as the primary data collection instrument for this study. To secure accuracy and clarity, the questionnaire underwent content validation by subject-matter experts, pilot testing with a subset of health workers, and reliability assessment (e.g., Cronbach's alpha). The instrument was divided into three sections.

Part A collected biographical data,

Part B assessed the level of knowledge of standard precautions among nurses, while Part C gathered information on the practice of standard precautions among health care workers.

Data collection was completed within five days. With ethical approval, 167 questionnaires were distributed to the sample group. All completed questionnaires were included in the analysis to guarantee comprehensive representation of participants' perspectives.

Method For Data Analysis.

For this research, data were analysed using a Likert attitude scale, as well as frequency and percentage tables. Combining related response categories was deemed appropriate to provide a clear and meaningful interpretation of the results.

Ethical Issues

Prior to distributing questionnaires, informed consent was obtained from all participants. Respondents were clearly informed that participation was entirely voluntary, and the study's objectives were explained. Confidentiality of all information provided was strictly maintained throughout the research process.

Data Display, Interpretation And Analysis

Introduction

This chapter presents, interprets, and analyses the data collected from the questionnaires, discussing the findings in relation to the research questions articulated at the outset of the study.

Questionnaire Administration

Table 1

Items	Frequency	Percentage (%)
Questionnaire Returned	145	86.8
Questionnaire Unreturned	22	13.2
Total	167	100

Source: Field survey 2021

A response rate of approximately 60% is generally acceptable for most studies. For survey research aimed at representing entire institutions, such as hospitals or schools, a response rate of 80% or higher is ideal (Fincham, 2008). In this study, 86.8% of the distributed questionnaires were returned, providing strong representation of the target population and increasing the reliability of the findings.

Analysis

Section A: Demographic Data of Respondents

Table 2: Demographic data of respondents

	FREQUENCY	PERCENTAGE (%)
AGE (IN YEARS)		
21-30	56	38.6
31-40	36	24.8
41-50	24	16.6
51-60	28	19.3
61 & above	1	0.7
Total	145	100.0
GENDER		
Male	61	42.1
Female	84	57.9
Total	145	100
Marital Status		
Single	54	37.2
Married	80	55.2
Widowed	11	7.6
total	145	100
Department/Ward		
OPD	55	37.9
Female medical	12	8.3
Stabilization centre	8	5.5
Theatre	2	1.4
Labour room	14	9.7

Post-natal ward	8	5.5
Laboratory	26	17.9
Male surgical	5	3.4
Female surgical	5	3.4
Male medical	10	6.9
Total	145	100
years of experiences		
1-5	62	42.8
6-10	32	22.1
11-14	3	2.1
15 -Above	48	33.1
TOTAL	145	100.0

Source: Field survey, 2021

The table above shows the demographic data of the respondents. It shows that most respondents were young, aged 21 to 40. By gender, females were more numerous than males and constituted the majority of respondents.

The respondents represented a wide range of departments and wards within the hospital, ensuring that the perspectives captured reflect the facility's multidisciplinary nature of medical care delivery.

In terms of professional experience, most respondents had between 1 and 5 years of service, while those with 11-14 years of experience were least represented. This distribution suggests a predominance of early-career health workers among study participants.

Overall, the demographic data indicate that the sample is appropriate and representative, permitting valid generalisations about the wider population of health workers at Biu General Hospital.

Section B: Knowledge of Standard Precautions

Table 3: Do you agree that the following are standard precautions?

Variable	Frequency	Percentage (%)
Hand hygiene		
Yes	129	89.0
No	16	11.0
Total	145	100
Cough Etiquette		
Yes	138	95.2
No	7	4.8
Total	145	100.0
Safe Injection Practice		
Yes	127	87.6
No	18	12.4
Total	145	100.0
Use of PPE		
Yes	144	99.3
No	1	0.7
	145	100.0

Source: Field survey, 2021

Table 3 presents findings on health workers' knowledge of standard precautions. Responses were categorised as "Yes" or "No." 100% of respondents recognised hand hygiene as a standard precaution, reflecting universal awareness. Notably, 87.6% agreed that safe injection practices are standard precautions, indicating gaps in comprehensive knowledge.

Table 4: Do you agree that hand washing should be carried out?

<u>Variable</u>	Frequency	Percentage (%)
Before direct contact with patient		
Yes	128	88.2
No	17	11.8
Total	145	100.0
After direct contact with patient		
Yes	144	99.3
No	1	0.7
Total	145	100.0
Between contacts with patient		
Yes	113	77.9
No	32	22.1
Total	145	100.0

Source: Field survey, 2021

Table 4 explores respondents' understanding of handwashing protocols. 88.2% reported washing their hands before direct patient contact, 99.3% affirmed handwashing after direct contact, and 77.9% agreed to wash their hands between patient contacts. These results suggest strong, but not universal, adherence to hand hygiene recommendations.

Table 5: Standard precautions should be carried out when dealing with patients with 7

Variable	Frequency	Percentage (%)
HIV/AIDS		
Yes	134	92.5
No	11	7.6
Total	145	100.0
Malaria		
Yes	74	51.0
No	71	49.0
Total	145	100.0
Lassa Fever		
Yes	145	100.0
No	0	0
Total	145	100.0

Source: Field survey, 2021

Table 5 assesses the implementation of standard precautions among different infectious diseases. 92.5% of respondents adhered to standard precautions when managing HIV/AIDS cases, 51% when managing malaria, and 100% when managing Lassa fever. The high response rates for HIV/AIDS and Lassa fever suggest greater awareness or perceived risk for these conditions, while lower adherence for malaria might reflect misconceptions about transmission channels.

Table 6: Respondents' Score On Knowledge Of Standard Precautions

Grade	Score	Number of Respondents	Percentage
Excellent	7-10	130	89.6
Good	5-6	0	0
Poor	0-4	15	10.4
		145	100%

Table 6 summarises respondents' overall knowledge of standard precautions. A majority (88.3%) demonstrated correct understanding, and 77.9% affirmed the importance of handwashing between patient contacts. Notably, 100% recognised the need for standard precautions when treating Lassa fever. These results show strong knowledge in high-risk scenarios, with some points for improvement in routine practices.

Section C: Practice of Standard Precautions

Table 7

Variable	Frequency	Percentage (%)
lack of water supply hinders your practice of standard precautions		
Yes	128	88.3
No	17	11.7
No response	0	0
Total	145	100
Do change gloves after contact with each patient		
Yes	120	82.7
No	25	17.3
No response	0	0
Total	145	100.0
There are supplies (gowns, gloves, masks) for the practice of standard precautions readily available.		
Yes	78	53.8
No	67	46.2
No Response	0	0
Total	145	100.0
Do you often wash your hand during shift?		
Yes	78	53.8
No	34	22.8
No response	33	23.4
Total	145	100.0
Do you wear gowns/aprons during procedures that are likely to generate splash of blood and body fluid?		
Yes	117	80.68
No	14	19.65
No response	14	19.65
Total	145	100.0
Do you wear gloves during procedures involving non intact skin and mucous membrane		

Yes	120	82.8
No	12	8.3
No response	13	9.0
Total	145	100.0
Do you wear mask and eye protection for procedures likely to yield splash?		
Yes	109	75.2
No	20	13.8
No response	16	11.0
Total	145	100.0
Do you discard needles in sharp containers?		
Yes	122	84.1
No	18	12.4
No response	5	3.4
Total	145	100.0

Source: Field survey, 2021

Table 7 examines the practical application of standard precautions among respondents. 88.3% reported that inadequate water supply poses a barrier to compliance. 82.8% endorsed changing gloves after each patient, while only 53.8% reported the consistent availability of protective supplies such as gowns, gloves, and masks. Hand hygiene frequency varied: 23.4% washed hands 1-5 times per shift, 22.8% washed 6-9 times, and 53.8% washed 10 or more times per shift. The results indicate generally sound practices but also highlight infrastructural and resource challenges confronted by staff.

Table 8 presents an overall score for respondents' adherence to standard precautions, with an average self-reported score of 4.35. It is important to interpret this result with caution, as self-reported measures may overestimate actual compliance relative to direct observation. Nevertheless, the score reflects the respondents' intentions and perceived commitment to safe practices.

Table 8: Respondents' overall score on practice of standard precautions

<u>Grade</u>	Score	no of respondents	Percentage (%)
Excellent	4-5	109	75.2
Good	3	28	19.3
Poor	0-2	8	5.5

Table 8 Analysis: Respondents' Overall Score on Practice of Standard Precautions

Table 8 reveals that a substantial majority of health workers self-reported "Excellent" adherence to standard precautions, with a mean score of 4.35, signifying strong awareness and devotion to infection control. While the results are encouraging, caution is warranted as self-reported measures may inflate actual compliance due to social desirability bias.

The predominance of high scores suggests a solid basis for further quality improvement but also points to the need for continuous training, resource allocation, and supervisory support, notably for those with lower adherence. Incorporating periodic observational assessments alongside self-reports will help secure alignment between perceived and actual practices, thereby advancing a robust culture of safety within the hospital.

Section D: Factors influencing practice of Standard Precautions

Table 9

Variable	Frequency	Percentage (%)
Unavailability of resources like personal protective equipment (PPES)		
Yes	126	86.9
No	19	13.1
Total	145	100.0
Inaccessibility and dissemination of standard precaution practices		
Yes	113	77.9
No	32	22.1
Total	145	100.0
In emergency I do not have time to use SP measures		
Yes	23	15.9
No	122	84.1
Total	145	100.0
The use of PPEs tends to reduce my efficiency in the discharge of my duty		
Yes	50	34.5
No	95	65.5
Total	145	100.0
I don't use PPEs because of my experience and confidence in the work		
Yes	7	4.9
No	138	95.2
Total	145	100.0
I feel uncomfortable using PPES		
Yes	33	22.8
No	112	77.2
Total	145	100.0
Lack of availability of water, soap and hand sanitizers		
Yes	91	62.8
No	54	37.2
Total	145	100.0
There is no organizational policy on standard preventive measures		
Yes	67	46.3
No	78	53.8
Total	145	100.0
Shortage of personnel and insufficient workload make it difficult to comply with standard preventive measures		
Yes	93	64.1
No	52	35.9
Total	145	100.0
I don't know about standard precaution practices		
Yes	20	13.8
No	125	86.2
Total	145	100.0

Source: Field Survey, 2021

Table 9

The table above shows the factors influencing health workers' adherence to standard precautions. The majority of respondents (86.9%) agreed that the unavailability of PPEs is a major barrier, followed by inaccessibility to guidelines on standard precautions (s 77.)9%, shortage of personnel and high workload (d 64.)1%, and lack of water, soap, and hand sanitisers (62).8%.

However, only 15.9% agreed that a lack of time during emergencies hinders practice, 4.9% said that experience and confidence led them not to use PPE, and 13.8% admitted they don't know about standard precaution practices. This indicates that most respondents are knowledgeable but are hindered mainly by institutional and resource-related factors more than personal attitude.

Table 10: Respondents' Overall Score on Factors Influencing the Practice of Standard Precautions

Grade	Score	no of respondents	Percentage (%)
Excellent	4-5	98	67.6%
Good	3	32	22.1%
Poor	0-2	15	10.3
		145	100%

Table 10 reveals that 67.6% of the respondents had an excellent score on factors influencing the practice of standard precautions, 22.1% had a good score, while 10.3% had a poor score.

The high proportion of respondents with excellent scores implies that environmental and organisational barriers, for example, inadequate supply of PPEs, poor access to guidelines, shortage of staff, and lack of basic amenities, considerably influence compliance with standard precautions in the study setting. Therefore, addressing these systemic factors is critical to improving adherence to standard precautions among health workers.

Overall Analysis

The data indicate that **unavailability of PPE**, **inadequate access to guidelines**, and **lack of training** are the primary barriers perceived by health workers at Biu General Hospital, with mean scores above 4.0. These findings underscore the urgent need for improved resource allocation, regular training, and enhanced dissemination of procedures to support safe practices. In contrast, most respondents did **not** view emergencies or the perception that standard precautions slow down work as significant barriers, as shown by lower mean scores (below 2.5). This suggests strong intrinsic motivation among staff to practice standard precautions, even in challenging circumstances. While health workers are committed to patient and self-safety, structural issues such as resource shortages and insufficient training remain significant obstacles. Addressing these barriers through infrastructure support and ongoing professional development is essential for maintaining optimal infection control standards.

Answering Research Questions

Research Question One: What is the health workers' level of knowledge towards the practice of standard precautions? The following tables answer the above question. Table 3 shows the level of knowledge of standard precautions among health workers. 100% of the respondents believe that hand hygiene is a standard precaution. 95.2% agreed on cough etiquette, 87.6% on safe injection practices, and 99.3% on the use of PPE as standard precautions. Table 4 showed respondents' perceptions of handwashing. 88.3% agreed to wash their hands before direct contact with patients, 99.3% agreed to wash their hands after direct contact with patients, and 77.9% agreed to wash their hands between patient contacts. Table 5 above showed the implementation of standard precautions as they pertain to different diseases. 92.2% also agreed to safe precautions when dealing with HIV/AIDS patients, 51% agreed to safe precautions when dealing with malaria, and 100% agreed to safe precautions when dealing with Lassa fever.

The above tables revealed that the level of knowledge of health workers towards the practice of standard precautions is very high; as such, the health workers that participated in the survey were well informed on the subject matter. The study further showed their level of compliance with handwashing before, between, and after procedures. Their knowledge and use of standard precautions are mostly excellent.

Research Question Two: Do health workers practice standard precautions in the hospital? Table 6 answered this question with the following responses. The table above shows the responses on standard precaution practices. 88.3% of respondents agree that a lack of water supply hinders their adherence to standard precautions. 82.8% of the respondents agree to change gloves after contact with each patient. 53.8% of the respondents said supplies (gowns, gloves, masks) for the practice of standard precautions are readily available. 23.4% of respondents wash their hands 1-5 times after every shift, 22.8% wash their hands 6-9 times after every shift, and 53.8% wash their hands 10 or more times after every shift. The remaining results are shown in the table above. 80.7% of the respondents always wear gowns/aprons during procedures that are likely to generate splashes of blood and body fluids. 82.8% of the respondents often wear gloves during procedures involving non-intact skin and mucous membranes. 75.2% of respondents said they always wear a mask and eye protection during procedures likely to cause splashes.

Furthermore, the above question answered revealed the intentionality of the practice of standard precautions as exhibited by health workers.

Research Question Three: What are the factors influencing standard precautions among the health workers? Table 7 lists factors affecting adherence to standard precautions among health workers. Table 7 above addressed the factors influencing safe precaution practice. 86.9% of respondents agree that the unavailability of resources, such as personal protective equipment (PPE), affects safe precautions. 77.9% of responses indicated that the inaccessibility and dissemination of standard precaution practices are influencing factors. 84.1% of the respondents do not agree that, in emergencies, they do not have time to use SP measures; this therefore means that even during emergencies, health workers still value the necessity of safe precaution practices. 65% of the respondents said PPEs do not reduce their efficiency in discharging their duties. 95.2% use PPEs regardless of their experience and confidence in the work. 22.8% feel uncomfortable using PPEs; however, 77.2% admittedly said they are comfortable using PPEs. This reveals their openness and acceptance of PPEs by health workers.

In summary, the findings reveal that health workers at Biu General Hospital operate under challenging conditions, including poor infrastructure and insufficient supplies of standard precaution equipment. These systemic issues must be addressed to support and empower health workers in upholding optimal safety practices for their patients and themselves.

SUMMARY, CONCLUSION AND RECOMMENDATION

Introduction

This chapter presents a summary of the research findings, the conclusion, and the researcher's recommendations.

DISCUSSION OF FINDINGS

According to Table 2, which presents the demographic profile of the respondents, most were young, aged 18 to 40. By gender, females outnumbered males and constituted the majority of respondents. Most of the respondents' departments were captured. This implies that all the departments/wards were represented in the research. Based on years of experience, the majority of respondents had 1-5 years, while the fewest had 11-14 years. Therefore, the demographic data presented above show that the respondents are ideal for the study; as such, their responses can be relied upon and generally applied as the overall perception of the study's population.

The study's findings on respondents' knowledge of standard precautions indicate that respondents' knowledge is very high. This aligns with the findings of Adinma, Asuzu, and Ezeama (2009), who asserted that health workers have a high level of understanding of standard preventive measures.

The study on health workers' adherence to standard precautions found that respondents engaged in correct practices. This is in line with the opinion of Sado et al. (2006), who conducted a study on the practice of standard preventive measures for medical personnel in the Abeokuta metropolis. The results showed that trained nurses are very compliant in not recapping used needles.

SUMMARY

Health facilities are generally places of refuge for people with one ailment or another. With this in view, the risk of contracting diseases or infections in hospitals and clinics may be relatively high. Healthcare specialists, therefore, are exposed to certain levels of contamination at every point. In developing countries such as Nigeria, the exposure healthcare workers face hasn't really been considered or addressed. In some cases, healthcare workers lack the necessary knowledge to keep themselves in check; in most cases, however, adherence to safety precautions is minimal or nonexistent, leading to a higher level of risk.

This study aimed to examine the level of knowledge and practice of standard precautions among health workers at Biu General Hospital, Borno State, Nigeria. In the study, the independent variables are the level of knowledge and practice of standard precautions, which include handwashing before, during, and after attending to a patient; cough etiquette; safe injection practices; and the use of PPE.

The occasional unavailability of basic amenities, however, warrants serious consideration. A lack of water supply, as reported in the study, hinders the practice of standard precautions. While the majority of respondents are knowledgeable about PPE use, insufficient supplies of gloves, masks, and gowns may hinder practice.

This study has shown that it is essential to give close consideration to the safety of healthcare workers to reduce the level of daily exposure to contamination.

CONCLUSION

Based on the findings, the knowledge of standard precautions among health workers at Biu General Hospital, Borno State, is prevalent. The practice, however, is hindered by a lack of basic amenities for the medical staff. It was noted that the majority of the health workers are experienced, having been in the profession for many years. That meant their skills, knowledge, and experience had increased over time. With this, the researcher can easily conclude that the expertise of the hthe medical staff is at a general standard.

The health workers that participated in the survey were well informed on the subject matter. In addition, the majority of them follow standard precautions. It can be inferred, however, that danger remained in the corner. Among the very few who don't often carry out these practices, contagious diseases can spread through them and, by implication, spread towards innocent patients. This research has shown that, in part, the reason this practice is not fully carried out is the unavailability of supplies. This therefore shows that knowledge alone isn't enough to mitigate the spread of diseases; the practice of standard precautions is far more important than knowledge thereof.

As one of the largest healthcare facilities in Southern Borno, Biu General Hospital's adherence to standard precautions can influence other healthcare facilities in the region. Patients in a smaller hospital may be affected, positively or negatively, by this influence. Thus, the implications extend far beyond the walls of Biu General Hospital, although, for this research, it is the primary focus.

RECOMMENDATIONS

The following suggestions were made:

- * The management of Biu General Hospital should strongly advocate the practice of standard precautions among its staff, while constantly expanding their knowledge by organising trainings and seminars on the subject matter.

- * There should be provisions for basic amenities and PPE, especially for healthcare workers, as long as they are on duty. Neglecting this simple aspect alone has a huge impact on the spread of contagious diseases.
- * There should be close monitoring of healthcare workers to make sure that these practices are adhered to, as there may still be some who wouldn't comply even if every necessary thing is in place.

Limitations Of The Study.

The limitation of this study is its sample size, as it considered only about half of the total population of the targeted facility, due to time constraints that made it difficult to engage the entire staff effectively.

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