


**ASSESSING THE AWARENESS OF AND ADHERENCE TO THE UNIVERSAL  
SAFETY PRECAUTIONS (USP) AMONG HEALTH CARE WORKERS (HCWs) IN  
KOGI STATE SPECIALIST HOSPITAL (KSSH), LOKOJA, KOGI STATE,  
NIGERIA**

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**A mini-thesis submitted in partial fulfillment of the requirements for the degree of  
Master in Public Health at the School of Public Health,  
University of the Western Cape**

The logo of the University of the Western Cape is centered behind the text. It features a classical building with a pediment and columns, with the text 'UNIVERSITY of the WESTERN CAPE' written below it in a serif font.

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**November 2016**

## **Declaration and statements**

**I Efifie Uchechukwu E. declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.**

**Signature:** \_\_\_\_\_



**Date:** 27<sup>TH</sup> Nov. 2016

## **Dedication**

This piece of work is dedicated to my wonderful and supportive family; the family of Mr. and Mrs. Godwin Ijeoma Efifie.



## **Acknowledgements**

I would first and foremost like to acknowledge God almighty for His ever presence, grace, answers to all my prayers.

I want to appreciate my parents and siblings for their unwavering support during my study in UWC.

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## **List of Abbreviations**

HIV: *Human Immunodeficiency Virus*

USP: *Universal Safety Precautions*

PPE: *Personal Protective Equipment*

HCW: *Health Care Worker*

KSSH: *Kogi State Specialist Hospital*

SPSS: *Software Package for Social Sciences*

HCV: *Hepatitis C Virus*

HBV: *Hepatitis B Virus*

WHO: *World Health Organization*

CDC: *Centre for Disease Control and Prevention*

PEP: *Post-Exposure Prophylaxis*

BBI: *Blood-Borne Infections*

BBF: *Blood and other Body Fluids.*

NSI: *Needle Stick Injuries.*





## **Abstract**

**Introduction:** The Universal Safety Precautions (USP) are a set of principles including practices and protocols, which is meant to reduce or prevent occupational exposures to blood borne pathogens among health care workers (HCWs), during the course of their duties in health care settings. Globally and in Nigeria, significant number of HCWs are currently being exposed to blood and other body fluids while working in the hospital setting (Amoran, 2013; Samuel et al., 2008; Akinboro et al., 2012; Ajibola et al., 1994; Okechukwu et al., 2012). These exposures contribute annually to about 16,000 HCV infections and 66,000 HBV infections among HCWs worldwide (Prüss-Üstün et al., 2003) and about 1000 cases of HIV per annum in Nigeria since the first recorded case in 1984 (Okechukwu et al., 2012; Patricia et al., 2007). The objectives of the study were to describe the awareness of the USP among HCWs in Kogi State Specialist Hospital (KSSH), Lokoja and to describe the adherence to the USP among HCWs at KSSH.

**Methods:** A descriptive cross-sectional study was conducted among HCWs working in departments where contacts with patients' blood and other body fluids are possible in KSSH. An anonymous self-administered questionnaire was used for data collection. Analysis of the data collected was with Software Package for Social Sciences (SPSS) V23.0.0 for Mac.

**Results:** Of the 125 participants that returned their questionnaires, 37.6% were nurses, 17.6% were doctors and the remainder were laboratory staff, dentists and hospital attendants. Sixty-four percent (64%) of them were females, 49.6% had tertiary education while their average age was 38.5 years. Awareness of and adherence to the USP were observed to be 5.6% and 2.4% respectively. Statistically, complete awareness of the USP was not significantly associated with complete adherence to the USP. More so, 3% and 2.2% of the participants with the number of years in services within the ranges of 5-9 years and 1-4 years respectively had complete adherence to the USP. Statistically significant association was only noted between participants' age and complete adherence to the USP. Post-exposure prophylaxis (PEP) and use of personal protective equipment (PPE) were the two USP principles with the lowest levels of awareness and adherence, with 46% and 47.6% on awareness respectively and, 43.8% and 44.6% on adherence respectively.

**Conclusion:** The levels of awareness of and adherence to the USP among the HCWs in KSSH were observed to be very low. There is an urgent need for capacity building of the HCWs on the USP in the form of trainings, and in the long term, there is need to conduct a study to assess possible reasons for the observed outcome.

## **CHAPTER ONE**

### **INTRODUCTION**

In the hospital, sick people don't just recover from their illness, healthy people also get infected (David et al., 2010). Health care workers (HCWs) such as medical doctors, nurses, laboratory staff and attendants who work in health care settings are frequently exposed to infectious diseases during their work (Omiepirisa, 2012). Infections acquired in the health care setting are major causes of anxiety for HCWs (Honda et al., 2011). These infections include diseases like hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency Virus (HIV) and other blood borne diseases (David et al., 2010; Obalum et al., 2009).

Globally, it has been estimated that the annual proportions of HCWs exposed to blood-borne pathogens were 2.6% for HCV, 5.9% for HBV, and 0.5% for HIV (Prüss-Üstün et al., 2003). In Nigeria, documented cases of HIV infection following occupational exposure among HCWs has continually increased to an annual average of 1000 cases since the first recorded case in 1984 (Okechukwu et al., 2012; Patricia et al., 2007).

The fact that patients' blood and other body fluids are potentially hazardous to HCWs, the safety of HCWs at their work place has become a great concern for health professionals all over the world (Bamigboye et al., 2006).

#### **1.1. Occupational exposure to blood-borne pathogens**

Studies have shown that HCWs are at risk of being infected with blood borne pathogens due to their occupational exposure to blood and other body fluids (BBF) (Agaba et al., 2012; Omiepirisa, 2012; Okechukwu et al., 2012; Patricia et al., 2007; Prüss-Üstün et al., 2003). It has been estimated that HCWs' exposure to blood-borne pathogens contributes annually to about 16,000 HCV infections and 66,000 HBV infections among HCWs worldwide (Prüss-Üstün et al., 2003) and 90% of these infections occurred in low-income countries (Kermode et al., 2005).

In general, the most common route of exposure is through sharps; lancets, broken glass, needles and other sharps instruments, while exposures from needle stick injuries has been reported as the most common of all (Omiepirisa, 2012). However, it should be noted that many studies have demonstrated that the incidence of needle stick injuries are poorly reported globally and more so in developing countries (Honda et al., 2011; Bolarinwa et al., 2011; Chalya et al., 2015; Voide et al., 2012; Amira et al., 2014). The reasons for non-report of these incidents ranges from perceived low risk of infection transmission following exposure, to perceived lack of time (Bolarinwa et al., 2011; Chalya et al., 2015; Voide C et al., 2012; Amira et al., 2014).

## **1.2. Brief history of the Universal Safety Precautions (USP)**

The earliest attempt to reduce the incidence of hospital-acquired infections among HCWs was in 1877, when the first recommendation for isolation precautions was published in the United States for patients with known infectious diseases (Lynch, 1949; CDC, 1996). Several recommendations, guidelines and protocols have since been published by the Centers for Disease Control and Prevention (CDC), the World Health Organization (WHO) and the United States Occupational Safety and Health Administration (OSHA); most of which were about protection against specific diseases or during a particular procedure. Countries adopt recommendations and guidelines from these bodies to develop their country-specific policies and guidelines.

In 1983, the CDC published the Universal Blood and Body Fluid precautions, simply called the 'Universal Precautions' (CDC, 1985; Farlex, 2012). These precautions were meant for patients known to have or suspected to have an infectious blood-borne pathogen and were also meant to prevent parenteral, mucous membrane and non-intact skin exposures to blood-borne pathogens by HCWs (CDC, 1985). They apply to blood, semen, vaginal secretions, deep body fluids, body fluids with visible blood, but not to faeces, nasal secretions, sputum, sweat, urine, tears and vomitus; unless they contain visible blood (CDC, 1983). In 1991, OSHA published its Occupational Exposure to Blood-borne Pathogen Standards, where they incorporated the Universal Precautions and added requirements for employers of HCWs to provide engineering controls, protective barriers and devices, immunization against hepatitis for HCWs and training of HCWs on the Universal Precautions (Farlex, 2012).

However, in 1996, the CDC published new guidelines known as the Standard Precautions sometimes, also referred to as the ‘Safety Precautions’ or the ‘Universal Safety Precautions’ (USP) (Garner, 1996; Farlex, 2012). It includes the Universal Precautions as well as other recommendations for care of patients irrespective of their diagnosis or presumed infection status. The USP apply to blood, all body fluids, secretions and excretions except sweat, with or without the presence of visible blood (Garner, 1996; CDC, 2011). It includes: hand hygiene, use of personal protective equipment (e.g., gloves, facemasks), respiratory hygiene and cough etiquette, safe injection practices and safe handling of potentially contaminated equipment or surfaces in the patient environment (CDC, 2011), decontamination and disinfection of instruments, maintenance of sanitary workplace and safe waste disposal; which are the core principles of the USP (USAID, 2000). Under each of these principles are the recommended activities or ‘dos’ and ‘don’t’ expected of HCWs in order to achieve adherence to the principles. These recommended activities are the USP practices.

### **1.3. Adherence to the Universal Safety Precautions**

Thoughtful adherence to the USP has always remained the primary means of reducing occupational exposure and risk of infection to blood borne pathogens among HCWs (Omiepirisa, 2012). For the USP to be effective in reducing the risk of HCW’s exposure to infectious diseases during work, the practices involved in the USP must be adhered to. However, many studies reviewed have shown that the significant number of HCWs currently being exposed to blood and other body fluids while working in the hospital setting can be attributed to non-adherence to the practices involved in the USP (Amoran, 2013; Samuel et al., 2008; Akinboro et al., 2012; Ajibola et al., 1994; Okechukwu et al., 2012).

Internationally, the adherence to the USP by HCWs has been suboptimal (Gammon et al. 2008). The practice of, or adherence to the principles of the USP by HCWs has also been found to be low in public hospitals, especially in resource-constrained countries like Nigeria (Ajibola et al., 1994; Okechukwu et al., 2012). The most common reason found to be responsible for low adherence to the principles of the USP is that of poor knowledge and understanding of the USP among HCWs (Omiepirisa, 2012). Others include: inadequate supply of needed equipment (Abdulraheem, 2012), absence of penalties for non-adherence to the USP (Nelsing, 1997 in Abdulraheem, 2012), perceived discomfort when applying the USP and work overload (Anupam et al, 2010). Many studies have been done in Nigeria on

the awareness of and adherence to the USP among HCWs. Those studies conducted, were done in specific areas of the country and cannot be generalized to represent the situation in the entire country due to varying study settings and study population's disease profile, as the Country is very heterogeneous.

Currently the National Agency for the Control of AIDS (NACA) in collaboration with the Nigerian Federal Ministry of Health (FMOH) is saddled with the responsibility of developing, reviewing and disseminating guidelines and policies related to safety practises among HCWs in health care settings in the country (NACA, 2010). Guidelines and policies are being periodically reviewed and disseminated while implementation at the State and Local Government levels are meant to be monitored by the State and Local Government arms of the FMOH and NACA (NACA, 2010; NACA, 2014). Some of the specific guidelines developed to ensure optimal practise of the USP in health care settings in Nigeria includes the following; National policy on universal safety precaution, Guidelines on TB infection control, TB infection control plan, Policy and Guidelines on safety of blood and blood products, Health care waste management protocol, National protocol of post exposure prophylaxis and Health workers' injection safety guidelines (NACA, 2010). However, no report or document was found about the efforts of the FMOH and NACA to enforce the implementation of these guidelines and policies at all levels.

#### **1.4. Rationale for the study**

Studies reviewed have shown high rates of occupational exposure to blood borne pathogens among HCWs via contact to blood and other body fluids in resource-constrained countries (Omiepirisa, 2012) and most of these studies also reported that poor awareness of and adherence to the USP were the major factors for the observed high rates of exposure (Amoran, 2013; Samuel et al., 2008; Akinboro et al., 2012; Ajibola et al., 1994; Okechukwu et al., 2012). More so, other studies have shown poor adherence to the USP standards in many developing countries including Nigeria. (Omiepirisa, 2012; Amoran, 2013; Samuel et al., 2008; Akinboro et al., 2012; Ajibola et al., 1994; Okechukwu et al., 2012).

In Nigeria, a major reason for non-adherence to the USP has been the unavailability of USP materials (Omiepirisa, 2012; Abdulraheem et al, 2012; Akinboro et al, 2012). This is mainly due to deficiencies and inequalities in health resource distribution across and within

geopolitical zones and States in Nigeria, which are based on political convenience and advantages instead of equity and need assessment (Khemani, 2006; Obansa et al, 2013). More so, since Nigeria is a very heterogeneous Country with very diverse culture and belief systems, the outcome of studies done on the field of the USP in Nigeria cannot be generalized to represent all the Local Government Areas (LGAs) in Nigeria. Kogi State has its own distinct setting and varied influence of politics on health resource distribution and management across communities in the State, hence studies on the USP should have a different outcome. Besides, no study on HCWs' awareness of and adherence to the USP has been done in the State. Therefore, there is need to assess the awareness of and adherence to the USP among HCWs in the State, in a bid to help in forming a state-specific picture of the challenges relating to the USP among HCWs in the State. Added to these reasons, is the requirement of the University of Western Cape, to focus on local health services in the mini thesis for the completion of Master program in Public Health in the University.

### **1.5. Purpose**

It is hoped that the outcome of this study can be used by the Management of Kogi State Specialist Hospital (KSSH), Kogi State Government, through the State Hospital Management Board and the State Ministry of Health as well as other partnering Non-Governmental Organizations (NGOs), to inform policy decisions on exposure to blood and body fluid among HCWs in the State. Other users could be the Centre for Disease Control and Prevention (CDC), World Health Organization (WHO) and other training and funding institutions and organisations.

### **1.6. Aim and Objectives**

The aim of the study is to describe the awareness of and level of adherence to the Universal Safety Precautions among health care workers in Kogi State Specialist Hospital, Lokoja.

The objectives are:

To investigate the level of awareness of the Universal Safety Precautions among health care workers.

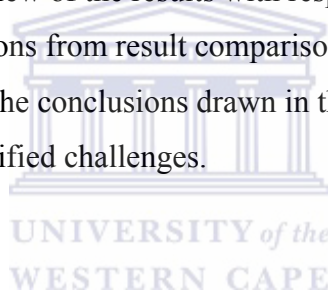
To investigate the level of adherence to the Universal Safety Precautions by health care

workers

To investigate association between some demographic variables and awareness of and adherence to the Universal Safety Precautions among health care workers.

To investigate association between awareness of and adherence to the Universal Safety Precaution among health care workers.

In order to achieve these objectives, it is important to review similar literature in the field of the USP and related fields. This will be done in the literature review. The results of the literature review will help in coming up with the best methodologies to achieve the objectives as will be discussed in the chapter on methodology. After analysing the data from the study, the results will be presented using text and tables in the chapter on results. The inclusion of analysis of associations as stated in the objectives is to have outcomes that will help inform specific interventions on the USP by the stake holders in the hospital and beyond. Then the discussion chapter will be the review of the results with respect to results of other studies as well as drawing specific conclusions from result comparisons. The chapter on conclusion and recommendation will harmonise the conclusions drawn in the chapter on discussion and proffer recommendation for identified challenges.





## **CHAPTER TWO**

### **Literature Review**

The purpose of this chapter is to review the existing literature in the field of the Universal Safety Precautions (USP) and related fields. More so, this review includes studies done across the cascade of risk of occupational exposure among health care workers (HCWs), HCWs' risk of infection acquisition following occupational exposure and how to prevent or reduce the risks of occupational exposure.

#### **2.1. Health care workers' risk of occupational exposure and risk of infection with blood-borne infections following exposure**

HCWs are potentially exposed to blood and other bodily fluids (BBFs) in the course of their work and are therefore at risk of infection with blood-borne infections (BBIs) like Human immunodeficiency virus (HIV), hepatitis C virus (HCV) and hepatitis B virus (HBV), which are the major focus of this study. These exposures can occur through needle stick injury (NSI) or other sharps injuries, splashes of BBFs to the eyes, nose or mouth and contact of non-intact skin with BBFs. This section will review studies done in the field of the USP with emphasis on HCWs' risk of occupational exposure and HCWs' risk of infection acquisition following occupational exposures. It will also seek to identify any trends in these two outcomes across different regions or countries.

##### **2.1.1. Health care workers' risk of occupational exposure**

Several studies done across the globe have assessed the rate of exposure to BBIs among HCWs, and these have shown varying results; even within the country. This may be due to varying levels of awareness of and adherence to the USP as well as different methodologies used to assess the risk of occupational exposure. Whereas some authors define a recall period (of 12 months for most studies), other do not; making it difficult to compare outcomes.

A review of European studies among different categories of HCWs, showed an average rate of exposure to BBFs of 9.3% (Vaz et al., 2010). However, this is different from that from a study in India where the rate was 23% (Amrita et al., 2012). In the Republic of Serbia,



Markovic-Denic et al. (2015) observed an exposure rate of 30% on their study of HCWs in five tertiary care hospitals. These very varied contexts may explain the big differences observed.

In Africa, as a whole, it is estimated that HCWs suffer two to four exposures via needle stick injuries (NSI) per year on average (Nsubuga et al., 2005). According to WHO (2013), about 90% of occupational exposures occur in developing countries. This estimate is not so different from outcomes of studies done in Nigeria and Tanzania where occupational exposures were observed in 49% of the HCWs within a 12 months' recall period in Tanzania (Chalya et al., 2015) while in Ibadan, South West Nigeria, two different but similar studies observed high rates of occupational exposure of 31% (Bolarinwa et al., 2011) and just over 25% (Olowu et al., 2001 in Vaz et al., 2010).

It is worthy to note that NSI has been shown by almost all the studies reviewed, globally and in Nigeria to be the most common occupational health accident among HCWs.

### **2.1.2. Health care workers' risk of infection acquisition following occupational exposure**

The major occupational hazard faced by HCWs is the risk of acquisition of numerous BBIs including HBV, HCV, and HIV, through exposure to human BBFs (Esin et al., 2006; Adegboye et al., 1994; CDC, 2013). According to the CDC (2013), the risk of acquisition of HBV from a single NSI exposure is between 6% and 30%, 1.8% for HCV and 0.3% for HIV. In the case of risk of HIV infection following occupational exposure, some authors believe that the low figure observed and quoted above might be due to under-reporting of cases, especially in sub-Saharan Africa where the burden of HIV is the highest worldwide and with limited surveillance (Kaiser Family Foundation, 2013). It has been observed that sharps injuries may be under-reported by 39.4% to 75% in sub-Saharan Africa (Honda et al., 2011). As shown above, globally, HCWs' exposure to BBFs contributes annually to about 16,000 new HCV infections and 66,000 new HBV infections among HCWs (Prüss-Üstün et al., 2003) and 90% of these infections occurred in low-income countries (Kermode et al., 2005).

In Nigeria, as was stated above, documented cases of HIV infection following occupational exposure to HIV among HCWs has continually increased to an annual average of 1000 cases since the first case in 1984 (Okechukwu et al., 2012; Patricia et al., 2007).

Therefore, there is need to strengthen the implementation of the USP, as was directed by the Centre for Disease Control and Prevention (CDC) among HCWs in developing countries (CDC, 2013).

## **2.2. Review of studies done on the Universal safety precautions among health care workers**

Globally, several studies done in the area of the USP have demonstrated varying results but have also employed varying methodologies. In this study, review of results will focus on assessment of awareness of and adherence to the USP. The reviews and comparisons will be based on the component principles and practices of the USP assessed across the sections of awareness of and adherence to the USP.

### **2.2.1. General observations on studies done on the Universal Safety Precautions among health care workers**

This section will briefly highlight some of differences in the studies reviewed in order for clearer appreciation of the different results identified.

Almost all the studies reviewed employed a descriptive cross-sectional study design, using a questionnaire, except Helfgott et al. (1998) and Abdulraheem et al. (2012) who used a checklist for direct, non-participatory observation of HCWs during procedures, for assessment of adherence to the USP.

The designs and construct of the questionnaires used for data collection vary greatly, even among studies with similar aims and objectives. Whereas most studies have three sections (socio-demography, assessment of awareness of the USP and assessment of adherence to the USP), others have number of sections ranging from two to six. This might be due to different approaches, guidelines or other questionnaires/studies adopted during the design of the questionnaire.

The authors in the studies reviewed used varying methods to assess awareness of the USP and adherence to the USP. Whereas some authors made use of a list of variables to assess

awareness, others employed the use of single questions to assess either awareness of or adherence to the USP or both. These observed variations can make comparison of outcomes difficult; hence comparisons and reviews should be based on the component variables assessed across the sections of awareness of and adherence to the USP.

### **2.2.2. Findings on assessment of Health Care Workers' awareness of the Universal Safety Precautions**

High levels of awareness of the USP among HCWs have been suggested to be correlated to complete adherence to the USP (Gershon et al., 1995 in Abdulraheem et al., 2012). This section reviewed the different results of studies done on the USP with emphasis on assessment of awareness of the USP. The review was based on the components of the USP assessed. Light was shed on some relevant characteristics of the study population and selection criteria. This is to facilitate more understanding of the differences in the results.

#### **2.2.2.1. Findings on assessment of general levels of awareness of the Universal Safety Precautions**

This sub-section will take a look at the observed general level of awareness of the USP from studies reviewed.

Studies reviewed have different formats of calculating general level of awareness of the USP. Some authors did not show or explain steps taken to arrive at the outcomes for 'good', 'poor' or 'low' levels of awareness of the USP. This is believed to be based on an overall and subjective view of the results of the individual items or variables in section on awareness of the USP. However, in most of the studies, 100% correct responses to all items in the awareness section was taken to be 'good' while any incorrect response to any of the items in same section will categorize the result of the section as 'poor'. The scores adopted by the other authors for the 'good' category ranges from 'equals to or above 60%' correct responses, to 'equals to or above 75%' correct responses.

A study done in Texas, USA among resident doctors and students in a Department of Obstetrics and Gynaecology did not calculate an average level of awareness of the USP in general, but showed that 89% of the participants were aware of the risk of HIV transmission

following exposure to an infected patient (Helfgott et al., 1998). Low level awareness of the USP was observed in a cross-sectional study in Jamaica, where 64% of the responders showed adequate awareness of the USP (Vaz et al., 2010). Meanwhile, a study of HCWs by Fayaz et al. (2014) in four national hospitals in Kabul, Afghanistan also showed poor level of awareness of the basic principles of the USP among HCWs (Fayaz et al., 2014). However, there was no obvious objective system employed to arrive at the conclusion of a 'low' or 'poor' level of awareness, and no figure was given as the rate of general awareness of the USP in the study.

Studies done in Nigeria had equally diverse results about the general level of awareness of the USP. A descriptive cross-sectional study of a range of HCWs working at a tertiary hospital in South-south Nigeria by Tobin et al. (2013) assessed the knowledge and practice of infection control among the HCWs. In the study, they observed that only half of the participant chose the correct responses to all the questions on awareness of the USP, which according to them (the authors) suggested low levels of awareness. A similar survey of HCWs (doctors and nurses only) in eight public health facilities in north-central Nigeria found that only 16.6% of participants responded correctly to all the questions about awareness of the USP. A further north eastern Nigerian study reported complete awareness of the USP in only 13% of respondents (Abdulraheem et al. 2012). In contrast to these studies that found relatively low levels of awareness of the USP, a study in two tertiary hospitals in south eastern Nigeria, showed awareness level of 95% (Adinma et al., 2009). Another study in south eastern Nigeria, at primary health care level, showed that complete awareness level was observed in more than half of the participants (Aniwada et al., 2016) while another study of theatre personnel in a tertiary hospital, south western Nigeria, observed complete awareness of the USP on 90% of the participants (Okhiai et al., 2014). Comparison between these studies is not simple because they include different groups of HCWs and are conducted in different socio-cultural contexts.

#### **2.2.2.2. Findings on assessment of awareness of the practices of the Universal Safety Precautions among Health Care Workers'**

From the studies reviewed, there are varying results reported for most of the issues assessed on awareness of USP practices. In most of the studies, more of the HCWs were aware that the

USP was necessary for all patients irrespective of infectious status (Anupam et al., 2010; Fayaz et al., 2014; Tobin et al., 2013; Okechukwu et al., 2012). Greater proportion of the HCWs were also reported to be aware that all fluids should be regarded as infectious (Anupam et al., 2010), that the USP is not only meant for patients with HIV (Fayaz et al., 2014) and that non-recapping of needles was a good safety practice (Tobin et al., 2013). The issues with the least awareness level varied across the studies reviewed and there was no singular issue within the USP with particularly poor awareness. Some of these issues with poor awareness were that the USP is only required if patient is HIV positive (all the doctors) (Anupam et al., 2010), that the USP is meant to protect both HCWs and patients (Abdulraheem et al., 2012) and that the USP should be applied to situations that might lead to contact with urine and faeces (Fayaz et al., 2014).

In summary in Nigeria, studies show varying results on the issues assessed on awareness of the USP. On the average, greater proportion of these studies had poor awareness levels when compared to studies from the developed countries and other countries in the studies reviewed. The results of the studies in Nigeria were not consistent, and they varied greatly with each other just as that with general level of awareness of the USP. This makes it difficult to generalize towards having representative results for the country. Rather, each study should represent the situation in that state or geopolitical zone. Unfortunately, no study in the field of the USP, done in Kogi State was found; hence the need for this study.

### **2.2.3. Findings on assessment of Health Care Workers' adherence to the Universal Safety Precautions**

This section will review the different results of studies done on the USP and related fields with emphasis on assessment of adherence to the USP by HCWs. The section is going to focus on the comparison of results based on the issues on the USP that were assessed.

#### **2.2.3.1. Findings on assessment of general level of adherence to the Universal Safety Precautions**

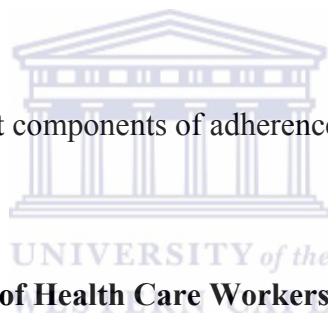
Adherence to the USP reduces the risk of exposure to BBFs among HCWs (Chan et al, 2002 in Abdulraheem et al., 2012). Overall adherence to the USP varies as indicated in the studies

reviewed.

Just as in the review of results on general level of awareness of the USP, studies reviewed have different formats of calculating general level of adherence to the USP.

The study by Helfgott et al. (1998) in Houston, Texas, showed that 89% of the participants were observed to have complete adherence to the USP. This is much higher than that from the study by Kermode et al. (2005) above, among HCWs in India, where only 11% had complete adherence to the USP. Similarly, Anupam et al. (2010) found 'poor' overall adherence rate in India, even though 76% of the respondents admitted to having been adequately trained on the USP, especially on use of PPE. Johnson et al. (2012), in a study of the knowledge and practice of the USP among professional HCWs in public and private health facilities in Uyo, South-south Nigeria, observed average level of adherence to the USP to be at 62%.

More results were on the different components of adherence to the USP as shown in the sub-sections below.



#### **2.2.3.2. Findings on assessment of Health Care Workers' adherence to the different issues on adherence to the Universal Safety Precautions**

There were notable variations on the list of issues assessed on the section for adherence to the USP in the studies reviewed. Adherence to the use of personal protective equipment (PPEs) was the most commonly assessed issue in the studies reviewed.

#### **2.2.3.2.1. Findings on assessment of Health Care Workers' adherence to the use of Personal Protective Equipment**

Personal Protective Equipment are used as barriers to prevent transmission of microorganisms to a host (HCW or patient) in a hospital setting. They include gloves, face mask, eye protection, apron and shoes (Table 1) (USAID, 2000).

**Table 1:** Personal Protective Equipment, USAID, 2000

Personal Protective Equipment	Use
Gloves	Prevents HCWs' hand from coming in contact with patients' blood and other fluids, non-intact skin, surfaces and instruments that have been contaminated.
Face mask	Prevents HCWs' nose and mouth from being exposed to splashes of blood and other body fluids.
Eye protection	Prevents HCWs' eyes from being exposed to splashes of blood and other body fluids.
Apron	Prevents HCWs' skin from being exposed to splashes of blood and other body fluids.
Shoe	Protects HCWs from stepping on contaminated sharps or falling sharps

General adherence to the use of PPEs was 9% in a study by Vaz et al. (2010) in Jamaica, but was reported to be 51% (Ogoina et al., 2015) and 56% (Abdulraheem et al., 2012) in Nigeria. These results in Nigeria were also supported by that from Sadoh et al. (2006) in Nigeria, where less than two-third of the HCWs used PPEs. In India, it was observed in a study that none of the attendants used protective foot wears when handling and disposing off hospital wastes, even though general adherence to the USP among them was 40% (Megha et al., 2013).

On the use of eye protection as a part of PPE, Kermode et al. (2005), in India reported 32%



adherence rate among HCWs, which was even better than that from the study by Anupam et al. (2010) in same India, where none of the participants used eye protection. Fayaz et al. (2014) in Afghanistan observed a similar but relatively higher adherence level to the use of eye protection, where it was 59%. The result of the assessment of this same issue was observed to be higher in the study in Texas where 67% of the HCWs were adherent to the use of eye protection (Helfgott et al., 1998). In Nigeria, a relatively high adherence rate of 69% was observed on the use of eye protection in the study by Okechukwu et al. (2012), in North-central part of the Country. A similar study done in Eastern part of the Country had a relatively average result of 53% (Aniwada et al., 2016).

Across all studies reviewed, very few of the authors did not include assessment of the use of gloves in the assessment of adherence to the USP. Level of adherence to the use of hand gloves was relatively low in studies done in India; 68% (Kermode et al., 2005) and 85% (Anupam et al., 2010). In the study by Fayaz et al. (2014) in Afghanistan, adherence to the use of hand gloves was higher than those in India as it was reported to be 93% (Fayaz et al., 2014). Even higher and perfect was that observed in Texas where it was 100% (Helfgott et al., 1998). Aniwada et al. (2016) in their study in Eastern part of Nigeria observed a relatively poor adherence to the use of hand gloves which was 56% in their study. This is only similar to that from the study by Abdulraheem et al. (2012) in Nigeria above. Tobin et al. (2013) in their study in South-south geo-political zone of Nigeria reported that use of hand gloves was 88%. This is closer to the outcome of the study by Anupam et al. (2010) in India above. Even higher was that reported in the study by Okechukwu et al. (2012) in North-central Nigeria, where use of hand gloves was observed to be 98%, closer to the outcome of the study by Helfgott et al. (1998) in Texas, USA. Use of gloves was 82% in the study by Ogoina et al. (2015) in South-south and North-central Nigeria and this supports the results from the study by Tobin et al (2013) in South-south and that of Okechukwu et al (2012) in North-central above (Ogoina et al., 2015). There were notable variations in the results, even within regions except in the case of the results of studies done in South-south and North-central Nigeria. Studies done in the developed countries had better results than those done in developing countries like India and Nigeria.

Adherence to use of apron was assessed in most of the studies reviewed. It was observed to be 54% and 35% in studies done in India by Kermode et al. (2005) and Anupam et al. (2010) respectively. Fayaz et al. (2014) in their own study in Afghanistan reported adherence to the



use of apron to be higher at 79%. However, just as that from adherence to other PPEs observed above, the study in Texas, in a developed country by Helfgott et al. (1998) also was much higher than others as 95% of participants used apron. The use of apron in Nigeria was again observed to be inconsistent across studies in different geo-political zones of the Country as it was 50% in South-south Nigeria (Tobin et al., 2013), 47% in South-eastern Nigeria (Aniwada et al., 2016) and 88% in North-central Nigeria (Okechukwu et al., 2012).

In summary, use of PPEs was observed to be much higher in developed countries than in developing countries. Results of studies done in Nigeria were observed to be very inconsistent and as such makes it difficult to generalise and have a picture of the situation in Nigeria.

#### **2.2.3.2.2. Findings on assessment of adherence to good sharp practices**

In keeping with the principles and practices of the USP, used needles should never be recapped (CDC, 2011). The authors in the studies reviewed, used different means to assess adherence to good sharp practices. However, most of them assessed the practice of recapping of used needles as shown below.

Kermode et al. (2005) in their study in India reported that 40% of HCWs still recap used needle and this is supported by that by Anupam et al. (2010) in India where 51% of the HCWs involved in the study still practice used needle recapping. This outcome was even worse in the Afghan study by Fayaz et al. (2014), where 57% of HCWs practice needle recapping. In Nigeria, the situation was observed to be better but still somewhat inconsistent across the geopolitical zones. Tobin et al. (2013) in their study in South-south Nigeria observed 15% used needle recapping rate among HCWs, while it was observed to be 18% in a similar study done in North-central Nigeria (Okechukwu et al., 2012). In the study by Okechukwu et al. (2012), greater proportion of doctors (24%) was observed to practice needle recapping than nurses (12%). These relatively good outcomes on needle recapping in Nigeria above differs from other Nigerian studies where it was observed that 34% of HCWs practice recapping in two tertiary hospitals in South-south and North-central Nigeria (Ogoina et al., 2015). This is similar to that by Wilson et al. (2006) in Nigeria, where 32% of HCWs admitted to recapping of used needles. The study by Aniwada et al. (2016) in South-eastern Nigeria showed that 39% do not have good needle handling practices, including recapping of

used needles.

More so, it should be noted that recapping of used needles was the commonest bad USP practices identified in most of the studies reviewed. Studies in India and Jamaica had higher rate of used needle recap practices than the ones done in Nigeria.

#### **2.2.3.2.3. Findings on assessment of adherence to proper waste segregation and disposal**

Proper segregation and disposal is also an important part of the principles of the USP (CDC, 2011).

Unlike in the case of needle recapping, Indian studies had better result than those done in Nigeria. Kermode et al. (2005) and Anupam et al. (2010) observed that 94% and 80% of HCWs in their studies practiced proper waste segregation and disposal respectively. Disposal of used needles and other sharps in their designated sharp boxes was observed to be 90% among HCWs in the study by Kermode et al. (2005). Fayaz et al. (2014) in their Afghan study also observed similarly high proportion of HCWs practicing proper waste segregation and disposal. In Nigeria, the results of the studies reviewed did not vary greatly, as Tobin et al. (2013) observed in their study, that 80% of the HCWs properly dispose used needles and other sharps in their designated sharp or safety boxes. This same variable was lower at 55% and 64% in the studies done by Aniwada et al. (2016) and Ogoina et al. (2015) in other areas in Nigeria.

#### **2.2.3.3. Findings on assessment of adherence to hand washing**

According to CCOHS (2014), hand washing is the single most effective way to prevent the spread of infections. Most of the studies reviewed assessed adherence to hand washing.

In the Afghan study by Fayaz et al. (2014), 89% of HCWs practiced hand washing after contact with patients, while 83% do same after removal of gloves. This result on hand washing is similar to that from the study by Kermode et al. (2005) in India, where 93% of the participants practiced hand washing after removal of gloves. However, Anupam et al. (2010) in India found 52% adherence rate to hand washing in their study, which is much lower than

that by Kermode et al. (2005) in the same India. In a study of HCWs in Primary level hospitals in North-central Nigeria by Abdulraheem et al. (2012), 39% of the HCWs practiced good hand hygiene even though 57% of them had adequate awareness of the importance of good hand hygiene in hospital setting. In South-eastern part of Nigeria, Ogoina et al. (2015) reported that 59% of HCWs in their study practiced hand washing after contact with patients, while 64% of them did same after removal of hand gloves. This is similar to that by Abdulraheem et al. (2012) above. The study by Tobin et al. (2013) observed hand washing after contact with patients as 83%. This result from the study by Tobin et al. (2013) is not so different from that from Okechukwu et al. (2012), where 96% of doctors and 98% of nurses reported practicing hand washing after contact with patients. Still in the study by Okechukwu et al. (2012), there was no significant association between hand washing and profession but it was observed between hand washing and years of service.

Generally, practice of hand washing also varies in Nigeria across the different geo-political zones but was consistently above average in the studies done in India and Jamaica as shown above.

#### **2.2.3.4. Findings on reasons for non-adherence to the Universal Safety Precautions.**

Almost all the studies reviewed identified suboptimal adherence levels to the USP. Most of these studies also assessed for possible barriers to USP adherence. This might suggest possible anticipation of non-adherence to the USP among the study populations, hence the assessment for level of adherence to the USP as well as reasons for non-adherence to the USP.

Studies done in the developed countries have reasons for non-adherence to the USP that are not so different from those in the developing and African countries. Lack of organisational support for the health and safety of HCWs was common across all the studies reviewed (Sonya, 2003; Robyne et al, 1995; Anupam et al, 2010; Nichol et al, 2008; Yakob et al, 2015; Hesse et al, 2006; Okechukwu et al, 2012; Abdulraheem et al, 2012). This barrier was presented in the form of lack of facility management to invest in the USP and unavailability of USP materials. The barrier observed in the studies done in Canada and Australia was misconception of risk of infection following exposure (Nichol et al, 2008; Robyne et al, 1995).

In some developing countries, the other reasons observed were those of high workload and observation of non-adherence to the USP by other colleagues, as in the study by Anupam et al (2010) in India. The others include: overcrowded work place in the study by Yakob et al (2015) in Ethiopia and no penalties for non-adherence to the USP in Jamaica in the study by Vaz et al (2010).

In Nigeria, added to unavailability of USP materials as a reason for non-adherence to the USP, there are also the following: deficient knowledge base on the USP, perceived reduction in dexterity when applying USP at work, lack of penalties for non-adherence to the USP and perceived discomfort with application of the USP when at work (Omiepirisa, 2012; Abdulraheem et al, 2012; Akinboro et al, 2012).

It is obvious that most likely, organisational support is one of the most important factor determining the success of the USP in the hospital, across the world.

#### **2.2.4. Associations between the awareness of and adherence to the Universal Safety Precautions with certain variables**

Across studies, associations were sort between awareness of and/or adherence to the USP, and HCWs' sex, profession and years of services. More importantly, association between awareness of the USP and adherence to the USP was also sort for in some studies. This section will review some of the associations assessed in the studies reviewed.

##### **2.2.4.1. Association between awareness of and adherence to the Universal Safety Precautions with Health Care Workers' profession**

In the study by Kermode et al. (2005) above, student nurses and doctors were found to be more likely to be adherent to the USP than nurses and laboratory workers. Some studies in Nigeria also support this result where they found that adherence to the USP was significantly associated with professions as more nurses had complete adherence to USP than other HCWs (Tobin et al., 2013; Adinma et al., 2009; Aniwada et al., 2016; Okechukwu et al., 2012). However, these findings contradict those from Swedish studies which reported that the majority of cases of occupational exposure to blood among HCWs were from nurses (Lymer

et al., 1997; CDC 1993 in Fayaz et al., 2014). Hence, disagreement in the association between adherence to the USP and HCW's profession.

This is not exactly the case for associations between awareness of the USP and profession. Almost all the studies suggested association between the awareness of the USP and HCWs profession. Some studies (Vaz et al., 2010; Aniwada et al., 2016) suggest that nurses show more awareness of the USP than other HCWs, especially doctors, while other authors like Adinma et al. (2009) in Nigeria, Anupam et al. (2010) in India and Butsasgvoli et al. (2010) in Georgia suggest that doctors are more aware of the USP than other HCWs. Hence there are variations in outcomes of the type of associations between awareness of the USP and specific HCWs' profession. Although many agreed that significant association exist between both variables.

#### **2.2.4.2. Association between awareness of and adherence to the Universal Safety Precautions and Health Care Worker's years of service**

In India, Kermode et al. (2005), reported that complete adherence to the USP was positively associated with number of years of service on the job. This is also similar to that from the study by Fayaz et al. (2014) in Afghanistan, which reported that the odds ratio (OR) of having complete adherence to the USP was more among HCWs with 7 or more years in service compared to those with 3 years or less in service. This suggests that complete adherence to the USP is positively associated with increasing years of service. However, this differs from that found in the study by Helfgott et al. (1998), where USP adherence decreases with each additional year on the job, and was supported by that from Adinma et al. (2009) in Nigeria.

The other assessments on associations were inconsistent across the studies reviewed. Fayaz et al. (2014) and Vaz et al. (2010) identified significant associations between USP adherence and HCW's sex, as female HCWs had higher OR of having complete adherence to the USP when compared to their male counterparts. However, the study by Tobin et al. (2013) identified no association between USP adherence and age, sex and years of service.

### **2.2.5. Association between the awareness of and adherence to the Universal Safety Precautions**

There were contradictions in results of assessment of association between the awareness of and adherence to the USP in studies reviewed. Most authors in the studies reviewed suggested that complete awareness of the USP does not necessarily result in complete adherence to the USP (Vaz et al., 2010; Hesse et al., 2006; Fayaz et al., 2014; McGaw et al., 2012). This contradicts the statement above that high levels of awareness of the USP among HCWs has been shown to have a correlation to complete adherence to the USP (Gershon et al., 1995 in Abdulraheem et al., 2012). However, Tobin et al. (2013) in Nigeria did observe that complete awareness of the USP was significantly associated with complete adherence to the USP.

### **2.3. Summary of review of studies done in Nigeria**

From the above reviews, there were obvious variations in the results of studies done in Nigeria. These observed diverse results might be due to many factors. The most important might be the inequalities in the distribution of health resources in Nigeria which is largely due to political expediency hence varied level of availability of equipment and other resources across and within communities (Khemani, 2006; Obansa et al, 2013). Another factor is the differences in the demographic characteristics of the study population as part of the heterogeneity of Nigeria, even for studies conducted in the same geo-political zone. The heterogeneity of Nigeria, where there are numerous and diverse cultures, belief systems, population settings and disease profiles, plays very important role in the observed diverse and inconsistent outcomes across and within geo-political zones in the country. Hence studies should be viewed with respect to the community of the study population. The other factor which might also apply in studies done in other countries, include the differences in the methodologies employed. For example, whereas Okechukwu et al. (2012) included only doctors and nurse in their study, Tobin et al. (2013) used doctors, nurses, laboratory scientists and attendants, which points to differences in selection criteria.

### **2.4. Summary**

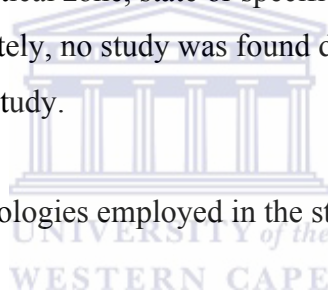
From the above, there are obvious variations in the methodologies employed in studies within the field of the USP across the world. This must have contributed in part to the variations and

almost lack of trends, as one reviews studies from one region of the world or countries of same socio-economic class to another, hence making comparison difficult.

However, studies done in developed countries show greater levels of general awareness of the USP than other countries. More so, most of the studies observed that more female HCWs had complete awareness of the USP and were also more likely to be adherent to the USP than their male counterparts.

Very notable was the inconsistency of the results of general awareness of the USP in studies done in Nigeria. This can be due to the political influences in health resource distribution and heterogeneity of the country as stated above. This same inconsistent pattern was also noted in the results of USP adherence in studies done in Nigeria, although this time, they were generally below the results of studies done in developed countries. Hence each study can only represent situations in the geopolitical zone, state or specific demographic property of the study population used. Unfortunately, no study was found done in Kogi State in the field of the USP, hence the need for this study.

This review informed the methodologies employed in the study.





## **CHAPTER THREE**

### **Methodology**

#### **3.1. Study Design**

A descriptive cross-sectional study design was employed to provide a cross-sectional description of the levels of awareness of and adherence to the USP among HCWs in the state. All similar studies reviewed above employed the use of cross-sectional study design. In order to achieve the aims and objective of this study, the assessment has to be very objective to be able to quantify and obtain values for the variables assessed in the study. To achieve this as closely and as clearly as possible, a quantitative research method was employed. More so, most of the reviewed studies in the field of the USP among HCWs employed it (Reda et al., 2009; Jolley et al., 2005; Okechukwu et al., 2012; Obi et al., 2008; Obi et al., 2005; Akinboro et al., 2012; Ajibola et al., 1994; Oguntona et al., 2010).

#### **3.2. Study Population and sampling**

The study was conducted among HCWs in Kogi State Specialist Hospital (KSSH), Lokoja, in Kogi State. Lokoja is the capital of Kogi State. Kogi State is located in the North-central geopolitical zone of Nigeria. The State shares boundaries with 12 of the 36 States in Nigeria (Ibitoye, 2012). Based on the 2006, population census, the State had a population of 3,278,487 people with about 70% of the population living in rural areas (NPC, 2006 in Ibitoye, 2012). The people are of 5 different ethnic groups with different cultures and languages, with Igala, Ebira and Okun being the most prominent tribes (Ibitoye, 2006 in Ibitoye, 2012).

The study population was HCWs (doctors, nurses, laboratory staff, attendants, dentists) at KSSH, Lokoja who were working in the following departments; Out Patient Department (OPD), Medical ward, Surgical ward, Labour ward, Maternity ward, Paediatric ward, Accident and Emergency Unit, Theatre, Laboratory department, and HIV Counselling and Testing unit. These are the departments where HCWs are expected to have possible contacts with patients' blood and other body fluids (BBFs) during their course of duty.



The estimated total number of active staff within the above departments is about 313 based on the staff list obtained from the administrative office of KSSH, Lokoja.

Sample size was calculated as follows:

Cochran formula for sample size when population is more than 10,000

$$N_0 = (t^2 * p * q) / d^2.$$

Where  $n_0$  = sample size

$t$  = selected value for alpha level. For this study, a 95% confidence level will be selected which is 1.96.

$p$  = estimated proportion of an attribute that is present in the population from a similar study and 17% was the level of knowledge of the USP among the HCWs in Abuja, Nigeria (Okechukwu et al., 2012). Therefore,  $p$  will be 0.17.

$$q = 1 - p; = 0.83.$$

$d$  = acceptable margin of error in decimals and will be taken as 5% which is 0.05.

$$\text{Therefore; } n_0 = (1.96^2 * 0.17 * 0.83) / (0.05)^2 \\ = 217.$$

Cochran formula for sample size when population is less than 10,000 was used since the population of HCWs in the selected departments in KSSH is 313. Therefore, the formula is as follows:

$$N_f = n_0 / [1 + (n_0/N)]$$

$N_f$  = sample size when population is less than 10,000.

$n_0$  = sample size when population size is more than 10,000; which is 217 as in above.

$N$  = size of the study population; which is 313.

$$\text{Therefore, } n_f = 217 / [1 + (217/313)] \\ = 129.$$

Therefore, the sample size that was used is 130 participants.

The stratified sampling method was employed. The nominal roll, which is a list of all the staff in the hospital arranged according to their departments and units, was obtained from the Administration Unit. From it, the list of all staff from the departments was obtained. This is to ensure that every staff in each selected department has equal chance of being selected for the study. Equal proportions of staff from all selected departments were randomly selected for the study. This ensured equal representation of the population across all departments and

also enabled statistical comparison of results per departments.

### **3.3. Data Collection**

The data collection procedure was with the use of a self-completed structured questionnaire. The questionnaire was developed after reviewing the Centre for Disease Control and Prevention (CDC) and United States Agency for International Development (USAID) guidelines on the USP (CDC, 2011; USAID, 2000), similar studies published (Reda et al., 2009; Jolley et al., 2005; Okechukwu et al., 2012; Obi et al., 2008; Oguntona et al., 2010; Fayaz et al., 2014; Tobin et al., 2013) and having considered the ease of application with respect to the study population. The questionnaire was six pages long and had three sections which contain 34 questions. All the questions were categorical with options for the respondent to select. The first section collected information about socio-demographics and contained five questions. The second section contained variables that assessed awareness of the USP and included 16 questions with two options (“Yes” or “No”) each, except one question. The first question was on awareness of the USP principles which has seven sub-questions, while the next 13 were on the awareness of the USP practices. The final section contained variables that investigated the USP adherence among the respondents and it had 10 questions with “Yes” or “No” options, except the first question. This first question was on adherence to the USP principles while the rest were on adherence to the USP practices.

The selected respondents were approached within working hours, but during their break time and were asked to participate in the study using the information sheet. Selected respondents who declined participation were randomly replaced from the same department or unit. All the selected staff that agreed to participate were offered the consent form and questionnaire, and were encouraged to respond to the questionnaire on the same day without any second party assistance or input. All respondents given the questionnaire were followed-up the same day to ensure timely response to the questionnaire and collection of answered questionnaires.

### **3.4. Validity and Reliability**

To improve validity in this study, there were clear and standard definitions of terms and variables. The questionnaire was made available in the 3 major languages in the state. To maintain the same meaning, the translated questionnaires were translated back to English by

another translator and both were compared. Differences identified were immediately corrected which were basically with some medical names; some were left untranslated as there were no local terms for them. The items or questions in each section of the questionnaire were developed after review of the guidelines on the USP by the CDC (CDC, 2011) and the USAID (USAID, 2000), and methodologies and questionnaires of similar studies that were published (Reda et al., 2009; Jolley et al., 2005; Okechukwu et al., 2012; Obi et al., 2008; Oguntona et al., 2010; Fayaz et al., 2014; Tobin et al., 2013) This helped to improve construct and criterion-related validity in the study (James, 1997; Weiner, 2007).

The reliability of this study was checked by making sure that the questionnaire was piloted with 12 staff who were not going to be involved in the study (Weiner, 2007). This helped to identify challenges with the questionnaire which were addressed. Changes to the questionnaire, after the pilot, were basically the inclusion of a question about the cadre of staff in the first section. More so, it was observed that the least educated who were thought would have preferred the questionnaire translated in their local languages, preferred reading in English, as most cannot read in their language unless read to. However, the main study still had the 3 local language versions which were offered to them, but it was only the English versions that were accepted.

More so, test-retest variation was tested on 10% of the respondents, which involved administering the questionnaire to the same respondent twice after a given period of time (Weiner, 2007); one week for this study. This was to know if there are variations in their responses and was assessed using interclass correlation coefficients (ICCs) and 95% confidence interval (Komagamine et al., 2014). However, there were no variations in their responses.

To improve subject and situational reliability through reducing the effect of respondent fatigue and condition under measurement, respondents were encouraged to answer the questions at their own convenient time within the hospital (Weiner, 2007).

### **3.5. Analysis**

The analysis was done with Statistical Package for Social Sciences (SPSS) V23.0.0 for Mac. The data from the questionnaire were coded before being inputted into SPSS for analysis.

In univariate analysis, descriptive analysis was conducted with the key outcome variables (awareness and adherence) and socio-demographic variables. Since most of the studies reviewed chose 100% correct responses as good score for each of the awareness and adherence sections, complete awareness of and adherence to the USP was taken as correct responses to all the questions in each of the sections. More so, complete awareness of and adherence to the USP principles were taken as correct answers to all the question on each subsection for awareness of and adherence to the USP principles. Likewise, complete awareness of and adherence to the USP practices was taken as correct answers to all the questions on each subsection on awareness of and adherence to the USP practices.

Bivariate analysis was used to compare data on the awareness of and adherence to the USP with socio-demographic variables of the participants. Chi-squared was used to measure association between variables. P value of less than or equal to 0.05 was taken as statistical significance.

### **3.6. Ethical Considerations**

Before implementing the study, the ethical permission was sought and approval received from the Senate Research Committee of the University of the Western Cape and the Research Ethics Committee at KSSH, Lokoja. The Information Sheets were provided and read to prospective respondents before issuing the consent form for those that accepted to participate. For those that could not understand English, the information sheet was read to them in one of the 3 local languages that they could understand (James, 1997). The study ensured that all the personal socio-demographic information of all participants involved was kept confidential and personal information like names and any identifying information were not collected. All respondents were clearly informed via the information sheet that participation was voluntary. The consent form was given to all respondents to sign, after reading or being read the information sheet, and all questions and concerns about the study addressed.

There were minimal anticipated risks to the participants associated with this study. The respondents were informed of the potential risks they might face in the study which was the temptation of responding to the questionnaire when they have immediate work at hand to attend to. This risk was minimized by encouraging them to respond only during break time as

it was clearly stated in the participant information sheet. Other risk that can be associated with the study is the discomfort involved in responding to the questionnaire. For this, they were informed that the outcome of the study will be used to ensure safety of HCWs in their hospitals including theirs.

In order to ensure justice, all forms of demands (in the form of time spent on attending to questionnaires especially) from the participants were minimized by enabling them to attend to the questionnaire at their convenience in terms of time and place (location within the hospital). The selection of participants was unbiased, starting from the approach for selection of prospective participants from each department, which was done randomly. More so, all participants were treated equally throughout the process of the study.



## **CHAPTER FOUR**

### **RESULTS**

In order to aid better understanding of the results of this study, it is important to reiterate that Universal safety precautions (USP), a set of standardised protocols meant to prevent all forms of infection transmission by protecting health care workers (HCWs) and patients from any form of occupational exposure within the hospital setting, has several recommended activities or ‘dos’ and ‘don’ts’. These recommended activities are embedded under some key principles or components (USAID, 2000; CDC, 2011). These recommended activities are the USP practices which are under the key principles, the USP principles.

In this chapter, the results of the study will be presented using texts and tables. After describing the study sample, there will be presentation of the results separately for awareness of the USP and adherence to the USP. Under each of these sections, results on their associated principles and practices will be presented. Finally, the result of a comparison of participants’ awareness of and adherence to the USP will be presented.

#### **4.1. Description of the study sample**

Out of the 130 HCWs approached (42% of the study population), 125 completed and returned the questionnaire. Of these 125 participants, 17.6% were doctors, 37.6% were nurses and the remainder were laboratory staff, dentists and hospital attendants (Table 2). The average age of the participants was 38.5 years with a range of 21-57 years and a standard deviation (SD) of 8.27 years. Of the participants 64% were female HCWs, while 36% were male HCWs. The majority of the participants had tertiary education (49.6%) as their highest educational level. The average number of years of services among the participants was calculated as approximately 6 years with a range of 1-21 years and a standard deviation (SD) of 3.61 years.

#### **4.2. Awareness of the Universal Safety Precautions**

In the study, only 5.6% of the HCWs had complete awareness of the USP. Of the participants aged between 40 and 49 years 8.8% had complete awareness of the USP (Table 3). Complete awareness of the USP was also observed among 8.9% of the male participants. Only 13% and

1.5% of the participants with the number of years in services within the ranges of 1-4 years and 5-9 years respectively had complete awareness of the USP. However, there were no significant association noted between complete USP awareness and any of the socio-demographic variables.

**Table 2:** Frequency distribution of the socio-demographic variables of the participants, Kogi State Specialist Hospital Lokoja, 2016

Socio-demographic variables		n	%
Participant Age (Years) (N=125)	20-29	12	9.6
	30-39	65	52
	40-49	34	27.2
	50-59	14	11.2
Participant Sex (N=125)	Male	45	36
	Female	80	64
Highest Educational Level (N=124)	Primary	1	0.8
	Secondary	38	30.4
	Tertiary	62	49.6
	Post-graduate	23	18.4
Participants' Profession (N=125)	Doctor	22	17.6
	Nurse	47	37.6
	Laboratory staff	10	8
	Dentist	2	1.6
	Attendant	44	35.2
Number of years in Service (years) (N=124)	1-4	46	36.8
	5-9	67	53.6
	10-14	8	6.4
	15-19	1	0.8
	≥ 20	2	1.6

**Table 3:** Disaggregation of complete awareness of the USP by socio-demographic variables and their test of significance, among the participants, Kogi State specialist hospital Lokoja, 2016

Socio-demographic variables		Complete awareness of the USP		Chi-square	
		Yes n (%)	No n (%)	Value	P-value
Participant Age (Years) (N=125)	20-29 years	0 (0%)	12 (100%)	2.142	0.544
	30-39 years	3 (4.6%)	62 (95.4%)		
	40-49 years	3 (8.8%)	31 (91.2%)		
	50-59 years	1 (7.1%)	13 (92.9%)		
Participant's Sex (N=125)	Male	4 (8.9%)	41 (91.1%)	1.371	0.242
	Female	3 (3.8%)	77 (96.3%)		
Participant Profession (N=125)	Doctors	2(9.1%)	20(90.9%)	8.695	0.069
	Nurse	5(10.6%)	42(89.4%)		
	Laboratory staff	0(0%)	10(100%)		
	Dentist	0(0%)	2(100%)		
	Attendants	0(0%)	44(100%)		
Number of years in Service (years) (N=124)	1-4	6(13%)	40(87%)	7.820	0.098
	5-9	1(1.5%)	66(98.5%)		
	10-14	0(0%)	8(100%)		
	15-19	0(0%)	1(100%)		
	≥ 20	0(0%)	2(100%)		

Complete awareness of the USP principles was reported in 34.4% of the participants. In terms of the USP principles, of all the participants, 90.3% were aware of personal safety work habits, while 46% were aware of post-exposure prophylaxis (PEP) (Table 4).

**Table 4:** Distribution of participant awareness of individual USP principles, Kogi State specialist hospital Lokoja, 2016

USP Principles (N=125)	n	%
Personal safe work habits	112	90.3
Hand hygiene	113	91.1
Needle stick and other sharp precautions	99	79.8
Quality sterilization and disinfection of instrument and workplace	72	58.1
Waste segregation and disposal protocol	90	72.6
Post-exposure prophylaxis (PEP)	57	46
Personal protective equipment (PPE)	59	47.6

Complete awareness of the USP practices was reported in 7.2% of the participants. Table 5 shows that all the participants were aware of the need for immediate clean-up of spilt blood while only 37.9% were aware that hands should be washed before and after every direct patient contact.

**Table 5:** Distribution of participants according to awareness of the USP practices, Kogi State specialist hospital Lokoja, 2016

USP practices (N=125)	n	%
USP should not only apply to patients living with HIV.	62	50.4
Blood and other body fluids of all patients should be treated as potentially infectious.	70	57.4
Information on infectious status of the patient is not necessary before conducting medical procedures.	62	50
If USP is applied appropriately, there is no need to worry about acquiring occupation-related infections.	110	89.4
Waterproof apron should be used when splash of blood and other body fluids is anticipated.	121	97.6
Eye protection should be used when splash of blood and other body fluids is anticipated.	120	98.4
One pair of gloves should be used for each patient.	120	96.8
Broken skin should be covered before coming to work.	121	99.2
Hands should not only be washed before and after direct patient contact.	47	37.9
Hands should always be washed after gloves are removed.	120	96.8
Used needles should not be recapped.	96	78.7
Sharps and needles should be disposed of in designated waste containers.	120	97.6
Spilt blood and other body fluids should immediately be cleaned up.	122	100



### 4.3. Adherence to the Universal Safety Precaution

This study reported that 2.4% of the participants had complete adherence to the USP. More so, it was observed that 16.7% of the participants within the age range of 20-29 years as well as 2.9% of those within the age range of 40-49 years had complete adherence to the USP. Complete adherence to the USP was also observed among 3% and 2.2% of the participants with the number of years in services with the range of 5-9 years and 1-4 years respectively. However, participants' age was the only socio-demographic variable found to be significantly associated with complete adherence to the USP and the younger HCWs were observed to be more likely to adhere to USP than their older counterparts (Table 6).

Only 20% of the HCWs had complete adherence to the USP principles. Complete adherence to the USP principles was observed to be lowest for Post-exposure prophylaxis (PEP) and use of Personal protective equipment (PPE), with 43.8% and 44.6% respectively (Table 7).

**Table 6:** Disaggregation of complete awareness of the USP by the socio-demographic variables and their test of significance among the participants, Kogi State specialist hospital Lokoja, 2016

Socio-demographic variables		Complete adherence to the USP		Chi-square	
		Yes n (%)	No n (%)	Value	P-value
Participant Age (Years) (N=125)	20-29 years	2(16.7%)	10(83.3%)	8.469	0.037
	30-39 years	0 (0%)	65(100%)		
	40-49 years	1 (2.9%)	33(97.1%)		
	50-59 years	0 (0%)	14(100%)		
Participant's Sex (N=125)	Male	2 (4.4%)	43 (95.6%)	1.190	0.275
	Female	1 (1.3%)	79 (98.8%)		
Participant Profession (N=125)	Doctors	1 (4.5%)	21(95.5%)	0.945	0.918
	Nurse	1(2.1%)	46(97.9%)		
	Laboratory staff	0(0%)	10(100%)		
	Dentist	0(0%)	2(100%)		
	Attendants	1(2.3%)	43(97.7%)		
Number of years in Service (years) (N=124)	1-4	1 (2.2%)	45(97.8%)	0.636	0.959
	5-9	2(3%)	65(97%)		
	10-14	0(0%)	8(100%)		
	15-19	0(0%)	1(100%)		
	≥ 20	0(0%)	2(100%)		

According to the study, 4% of the HCWs had complete adherence to the USP practices. 95.1% always cover their broken skin before coming to work while 35.5% practice use of eye protection (Table 8).

**Table 7:** Distribution of participant adherence to individual USP principles, Kogi State specialist hospital Lokoja, 2016

USP Principles	Responses		
	Always n (%)	Sometimes n (%)	Never n (%)
Personal safe work habits (N=123)	98 (79.7%)	24 (19.5%)	1 (0.8%)
Hand hygiene (N=123)	110 (89.4%)	5 (4.1%)	8 (6.5%)
Needle stick and other sharp precaution (N=122)	101 (82.8%)	12 (9.8%)	9 (7.4%)
Quality sterilization and disinfection of instrument and workplace (N=121)	64 (52.9%)	21 (17.4%)	36 (29.8%)
Waste segregation and disposal protocol (N=121)	82 (67.8%)	30 (24.8%)	9 (7.4%)
Post-exposure prophylaxis (PEP) (N=121)	53 (43.8%)	26 (21.5%)	42 (34.7%)
Personal protective equipment (PPE) (N=121)	54 (44.6%)	25 (20.7%)	42 (34.7%)

**Table 8:** Distribution of participants according to adherence to individual USP practices, Kogi State specialist hospital Lokoja, 2016

USP practices (N=125)	n	(%)
Used needles should not be recapped.	96	80
Hands should always be washed after gloves are removed.	64	52
One pair of gloves should be used for each patient.	91	74
Hands should not only be washed before and after direct patient contact.	111	89.5
Waterproof apron should be used when splash of blood and other body fluids is anticipated.	97	78.2
Broken skin should be covered before coming to work.	117	95.1
Information on infectious status of the patient is not necessary before conducting medical procedures.	70	56.9
Eye protection should be used when splash of blood and other body fluids is anticipated.	43	35.5
Sharps and needles should be disposed of in designated waste containers.	91	75.2
USP should not only apply to patients living with HIV.	80	65.6

#### 4.4. Association between awareness of the USP and adherence to the USP

In the study, all the participants with complete awareness of the USP had poor adherence to the USP, and only 2.5% of participants with poor awareness of the USP had complete adherence to the USP. There was no significant association between complete awareness of the USP and complete adherence to the USP.

#### 4.5. Summary

In summary, out of the 125 HCWs that participated in the study, 64% were females and almost half of the HCWs had tertiary education. Awareness of and adherence to the USP were found to be 5.6% and 2.4% respectively. PEP and use of PPEs were the two USP principles with lowest levels of awareness and adherence. Participants' age was the only socio-demographic variable that was found to be significantly associated with adherence to

the USP. None of the socio-demographic variables had significant association with awareness of the USP. There was also no significant association between awareness of the USP and adherence to the USP among the HCWs in the study.



## **CHAPTER FIVE**

### **DISCUSSION**

#### **5.1. Awareness of and adherence to the Universal Safety Precautions**

For ease of comparison with each other, the discussions on the results of the awareness of and adherence to Universal Safety Precautions (USP) will be done together. The discussion will also involve comparison of the results of awareness of and adherence to the USP with that of other studies reviewed.

Complete awareness of the USP was observed in only 5.6% of the health care workers (HCWs) in this study. This is lower than the results of all the studies reviewed. The lowest of the studies reviewed was observed in the study by Abdulraheem et al. (2012) in North-eastern Nigeria, where good levels of awareness of the USP was 13%.

It was observed that only 2.4% of the HCWs had complete adherence to the USP. This again is lower than the outcomes of other studies done in Nigeria (Johnson et al., 2012; Adinma et al., 2009) and other parts of the world (Helfgott et al., 1998; Anupam et al., 2010).

Even though more HCWs had complete awareness of the USP than complete adherence to the USP, none of the HCWs with complete awareness of the USP had complete adherence to the USP. It was only 2.5% of those with poor awareness of the USP were reported to have complete adherence to the USP. However, there was no statistically significant association observed between complete awareness of and adherence to the USP. These findings suggest that complete awareness of the USP does not necessarily lead to complete adherence to the USP. This was also suggested in studies by Abdulraheem et al. (2012) in Nigeria, Fayaz et al. (2014) in Afghanistan and Hesse et al. (2006) in Ghana, where awareness of the USP was shown not to lead to adherence to the USP among HCWs and they could not find any significant association between awareness of the USP and adherence of the USP.

Some studies done in Nigeria have suggested possible reasons for non-adherence to the USP among Nigerian HCWs. Some of them includes: unavailability of USP materials, deficient knowledge base on the USP and perceived reduction in dexterity when applying the USP at

work (Omiepirisa, 2012; Abdulraheem et al, 2012; Akinboro et al, 2012). At this point, one can only assume that these reasons might have played a role in the observed poor awareness and adherence level to the USP in this study. However, it is still important, due to the heterogeneity of the country to assess for reasons for these observed outcomes of this study.

## **5.2. Awareness of and adherence to the Universal Safety Precaution principles and practices**

From this study, the results of the awareness of and adherence to the USP principles have a significant recognised pattern.

Most of the HCWs are likely not aware of and do not adhere to the use of personal protective equipment (PPEs), assessing of post-exposure prophylaxis (PEP) and disinfection and sterilization of equipment and workplace. PEP and use of PPE were the two principles of the USP with the lowest awareness and adherence levels. The results from the awareness of and adherence to sterilization and disinfection of equipment and workplace were also poor. PPEs helps to reduce the risk of exposure of HCWs' body to potentially infectious blood and other body fluids (BBFs) (Abdulraheem et al, 2012). In the study, the result on awareness of PPE is only higher than that by Vaz et al. (2010) in Jamaica but lower than the outcomes of all the studies from Nigeria.

Awareness of the use of eye protection was relatively high, but contrastingly, the adherence to the use of eye protection was reported to be the lowest among the USP practices at 35.5%. This suggests that complete awareness of the use of eye protection did not lead to complete adherence to its use. This could be due to inadequate supply or non-supply of eye protection in the hospital as was reported in the study by Abdulraheem et al. (2012) in Nigeria. This reported low level of adherence to use of eye protection is similar to the results of a study by Kermode et al. (2005) in India where adherence to use of eye protection was 32%. Most studies reviewed, both those done in Nigeria and those done elsewhere in the world, had results higher than this observed low adherence rate in this study (Fayaz et al., 2014; Helfgott et al., 1998; Okechukwu et al., 2012; Aniwada et al., 2016).

Adherence to the use of an apron was reported by almost eight in every ten of participants in this study although awareness of apron use was very high at 97.6% in the study. Just like in

the case of use of eye protection above, this reported low level of adherence to apron use might be due to non- or inadequate supply of aprons. However, this reported rate of adherence to the use of aprons is better than the results of other studies in Nigeria (Tobin et al., 2013; Aniwada et al., 2013). The same goes for the studies done in India by Kermode et al. (2005) and Anupam et al. (2010) as they were all lower than this outcome.

Hand washing, as the single most effective way to prevent the spread of infections (CCOHS, 2014), should be taken as the basic for every HCWs to be aware of and strictly adhere to. It is very worrisome that in this study, just two-fifth of the HCWs were aware of proper hand washing practices and just over half of the HCWs do not practice proper hand washing. These two results are similar to that by Abdulraheem et al. (2012) in their study in Nigeria, where awareness of and adherence to hand washing were 39% and 57% respectively. The results of other studies in Nigeria (Tobin et al., 2013; Okechukwu et al., 2012), India (Kermode et al., 2005; Anupam et al., 2010) and Afghanistan (Fayaz et al., 2014) were higher than these results.

### **5.3. Association between awareness of and adherence to the Universal Safety Precautions, and certain socio-demographic variables**

The results of awareness of and adherence to the USP were analysed for their association with a selection of HCWs' socio-demographic variables. In this study, a greater proportion of male HCWs had complete awareness of the USP than their female counterparts. This same pattern of result was also reported for complete adherence to the USP, but there was no significant association observed between adherence to the USP and HCW's gender; likewise, awareness of the USP and HCW's gender. The results of the study by Vaz et al. (2010) in Jamaica, contrasted with these results as they reported that greater proportion of female HCWs had more awareness of and adherence to the USP than their male counterparts. In their results, participant's gender was found to be significantly associated with awareness of and adherence to the USP.

HCWs younger than 30 years had the highest proportion with complete adherence to the USP. There was significant association between HCWs' age and complete adherence to the USP. The study by Adinma et al. (2009) in Nigeria reported significant association between HCWs' age and USP adherence, and they observed that younger HCWs were more likely to

adhere to the USP than the older ones. Butsashvili et al. (2010), in their Georgian study noted a significant association between HCWs' age and USP awareness, and also reported that a greater proportion of HCWs older than 35 years of age had complete awareness of the USP. However, in this study a significant association was not noted between HCWs' age and awareness of the USP.

A greater proportion of nurses were reported in this study to have complete awareness of the USP when compared with the doctors and the other HCWs of other professions. However, there was no significant association between complete awareness of the USP and HCWs' profession. This was also the case between complete adherence to the USP and HCWs' profession. However, studies done in Nigeria by Aniwada et al. (2016), Adinma et al. (2009) and Tobin et al. (2013) noted a significant association between adherence to the USP and HCWs' profession, and all reported that more of the nurses were adherent to the USP than the doctors and the other HCWs. A significant association between awareness of the USP and HCWs' profession was also noted in the studies by Aniwada et al. (2016) and Tobin et al. (2013) in Nigeria as well as Vaz et al. (2010) in Jamaica. Generally, nurses appear likely to be more aware of and adherent to the USP than doctors and other HCWs of other professions.

The recently employed HCWs had a greater proportion with complete awareness of the USP and complete adherence of the USP when compared to the others in this study. However, there was no significant association between either complete awareness of the USP and complete adherence of the USP with HCWs years in service. Helfgott et al. (1998), in their study in Texas, reported a significant association between awareness of the USP and HCWs years in service, where they noted that participants with 16 years of service or above had better awareness of the USP than those with less than 16 years of service.

The conclusion and recommendations from this study which were drawn from the results and discussion chapters will be presented in the next chapter.

#### **5.4. Limitations**

The self-reporting method used in data collection for the study must have given room for social desirability bias on the outcome of adherence to the USP. Hence, the actual observed

adherence level should be lower than the self-reported adherence level presented in this study.

It is also important to note that the use of ‘correct answers to all the questions’ might have probably resulted to loss of some information and statistical power. Hence, an assessment of average level of awareness of and adherence to the USP among these same participants could result to different outcomes.

More so, due to varied influence of inequality in health resource distribution across and within communities in Nigeria as well as the heterogeneity of the Country, the outcome of study should not be generalized.





## **CHAPTER SIX**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **6.1. Conclusion**

The level of awareness of and adherence to the Universal Safety Precautions (USP) among health care workers (HCWs) in Kogi State Specialist Hospital (KSSH), Lokoja were observed to be very low. In general, there are incomplete levels of awareness of and adherence to the USP among the HCWs as there are relatively high proportions of HCWs who reported being aware of and are adherent to most of the individual principles and practices of the USP but very small proportions of them report complete awareness of and adherence to the USP. It is worrisome to observe low adherence rates for some of the USP practices, especially on some personal protective equipment (PPEs), despite relatively high awareness rates for the same practice. This points to possible inadequate supply of PPEs but cannot rule out possibilities of lack of adequate knowledge, and poor staff attitude. There are obvious knowledge gaps about the USP among the HCWs which must have accounted for the identified very low results in the study.

#### **6.2. Recommendations**

Due to the observed very low level of awareness of and adherence to the USP, this study calls for some recommendations which require interventions at different levels. These levels can be at the hospital management level, HCWs' level and government level.

Generally, there is need to build the capacity of the HCWs in the form of training to build knowledge about the USP. The older HCWs who appear to be least aware and are least adherent to the USP should be prioritized as the younger ones look up to them. On-going, periodic seminars on specific principles and practices of the USP using continuous medical education (CME) should also be instituted and supported by the hospital management. It is also a part of the USP that hospital management should also train their staff on the USP (Farlex, 2012).

Inadequate or non-supply of PPEs has been shown to be one of the major reasons for HCWs' non-adherence to the use of PPEs in Nigeria (Abdulraheem et al., 2012; Adinma et al., 2009, Okechukwu et al., 2012). The noted poor adherence level to the use of PPEs like eye protection and aprons, despite relatively high level of awareness to their use, is a likely pointer to inadequate or non-supply of these equipment or devices. Hence, there is a need to ensure an effective supply chain system to avoid stock outs of these very important equipment or devices.

From this study, there appears to be an obvious need for training of the HCWs on hand washing. Being the single most effective way to prevent the spread of infections (CCOHS, 2014), it is equally important to institute a system that sustains knowledge gained from the training on hand washing. To this end, pasting of information, education and communication (IEC) materials and job aids on hand washing techniques in all points of service at the hospital is important. Provision of adequate water supply and other consumables required for hand washing (Abdulraheem et al., 2012; Okechukwu et al., 2012) is also an important recommendation from this study.

Very important is the duty of the hospital management and State Ministry of Health (SMOH) in ensuring implementation and adherence to the recommendations of the USP among HCWs (CDC, 2011). To this end, there is need for the State Government through the SMOH to ensure periodic supervision of the hospitals to check the levels of adherence to the USP principles. Likewise, the hospital management should also have a system of periodically assessing adherence to the USP among their staff.

Finally, in the long term, there is need to conduct a study to assess possible reasons for these observed low results. This is necessary as lack of adequate knowledge about the USP might not be the only challenge, as one cannot rule out the possible influences of high work load, poor workplace safety and poor attitudes of HCWs in the presence of adequate supplies of equipment or devices (Abdulraheem et al., 2012).

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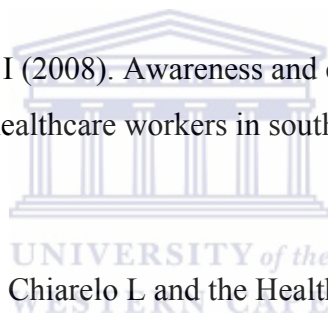
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## **Appendices:**

### **Appendix 1: Participant Information Sheet (English).**



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### **INFORMATION SHEET**

**Project Title:** Assessing the awareness and adherence to Universal Safety Precautions (USP) among Health Care Workers (HCWs) in Kogi State Specialist Hospital (KSSH), Lokoja, Kogi State, Nigeria.

#### **What is this study about?**

This is a research project being conducted by Dr. Efifie Uchechukwu at the University of the Western Cape. We are inviting you to participate in this research project because you are a staff of Kogi State Specialist Hospital Lokoja. Your duties in the hospitals mean that you might be exposed to HIV through possible accidents during your routine duty. The purpose of this research project is to describe occupational HIV exposure and to know if some factors are influencing it among HCWs in KSSH Lokoja.

#### **What will I be asked to do if I agree to participate?**

You will be asked to answer some simple questions about your awareness and adherence to the principals of Universal Safety Precautions. You will be required to answer some questions from an anonymous questionnaire. All of these will take on the average of about 20 minutes. The study will be done in your hospital, during working hours but during break time or at your own convenient time.

#### **Would my participation in this study be kept confidential?**

The researcher undertakes to protect your identity and the nature of your contribution. To ensure your anonymity, the survey will not contain information that may personally identify you. We will do our best to keep your personal information confidential. To ensure your confidentiality, your name will not be sought for. However, anonymous identity numbers will be allocated to the questionnaires that will be used, which will not be associated to you or any of the other responders.

If we write a report or article about this research project, your identity will not be used.

In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities' information that comes to our attention concerning child abuse or neglect or potential harm to you or others. In this event, we will inform you that we have to break confidentiality to fulfil our legal responsibility to report to the designated authorities.

### **What are the risks of this research?**

There may be some risks from participating in this research study. An anticipated risk in the study is the temptation to respond to the questionnaire at the expense of your work.

Therefore, you are encouraged to respond to the questionnaire during your break time. All human interactions and talking about self or others carry some amount of risks. We will nevertheless minimise such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study. Where necessary, an appropriate referral will be made to a suitable professional for further assistance or intervention.

### **What are the benefits of this research?**

The benefits to you include gaining more insight on the importance of avoiding occupational HIV exposure in your hospital and the importance of adhering to the Universal Safety Precautions.

This research is not designed to help you directly, but the results may help the investigator learn more about the occupational exposures to HIV and awareness and practice of USP. We hope that, in the future, other people might benefit from this study through making it very likely that fewer or no HCW is exposed to HIV while at work. To the society, it will help to ensure the safety of HCWs so that the health care work force will still be maintained.

**Do I have to be in this research and may I stop participating at any time?**

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify

**What if I have questions?**

This research is being conducted by DR EFIFIE UCHECHUKWU of School of Public Health at the University of the Western Cape. If you have any questions about the research study itself, please contact Dr Efifie Uchechukwu at Haruna Estate, Ganaja Village, Lokoja, 08064621166, 07057749499 and [efficiency4u@yahoo.co.uk](mailto:efficiency4u@yahoo.co.uk)

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

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This research has been approved by the University of the Western Cape's Senate Research Committee. (REFERENCE NUMBER: )



## Appendix 2: Participant Information Sheet (Igala).



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### OTAKADA INABALI UKOLO UKOCHE:

#### Oji Ukoche:

Ami akanya koga ei HIV neke du nwama chukolo ashibiti, ku ma no deju teneoga HIV ei Specialist Hospital kidi Lokoja state Kogi.

#### Enwu Che Chogbogaga Ukoche e Ki dei Taa?

Ei che ukolo ukoche ei abo shekulu olafia amone unyi ukoche, University of Western Cape ewo South Africa.

A dome kume buwa che ukolo ukoche ki dei todū ame chama chukolo ashibiti ei Kogi State Specialist, me la no deju tama ch'oga HIV. Enwu kichi i che kakini ukolo edeju tene oga HIV che neke nakanya nwolafia one chenwu kume ma koche alu ki dukpenwu chili chilin.

Todu abale, ogbogaga ukolo ukochei che kakini atene ka deju go, ka la no ko dufu ami hianyi ki defu ukolo edeju tamachoga HIV ashibiti, kala no tene enwu kichi kid abele.

#### Enwu Chukpe Emi Ku na'che Efu Ukolo Ukoche ki dei?

Anyā tume ene oji uma kumene lugbo edeju tola eme chenwu kume deju tamene oga HIV ashibiti. Ololonwu che kakinii, atene ka ma ichenwu kume numa ochili chili ki defu edeju tene oga le todū ki we mu ame onugo. Kpai chenwu ku me ma alu koda nwu de ojane duu. Me no jenwu wa ma enwu ki lugbo ukolo me efu deparmet me abeki yuniti me ashibiti emiyi. Atene e jenwume ma kakini, ochaka inabalii kume nya du nwu wai anya akpokpen ila ti miniti oogwu len.

Iko kume dukolo kpai iko umi me ojukolo onwu anyache ukoche ki dei. Me no neke che ikoduu kame atene.

#### Ukola duu Kunaka efu Ukolo Ukoche Kidei che Numaja? Abeku ma nya ka dufu Chakaa?

Anyā che teju alu kume atene, todū kukola duu kume aka abekohi duu kume adu efukolo ukoche ki dei, adu maja chakaa. Anyā dodu me dufu nwamojan todū a nya tume ene odumen.

Ama, anya dinoba nwume, ei kamone mama me kponwun. Inoba le la che kiya doji otakada kadu tume ene. A la kodu me tojinwun. Eele chi questionnaire kadu nwume.

Ichenwu ka la fotakada ko oji ukolo ukochei, a jenwene duu numa odu men, abekene kume chen.

Ola omune kinodomo che kakinii, todụ ka tene kache teju alu koda ukolo ukochei de, uma du kane lugbo akanya kame abekenedu neke ne a nya jenwu abo kuma chugbo oda ei ukolo ashibiti ma todụ kuma chenwu ojinwu.

### **Enwu Chakanya ki neke Kerebumi efu Ukolo Ukochei Taa?**

I chenwu kamone acholuka lugbo olama abeki lugbo amone, kuma ma che kpai iben, I cheneke chenwu ihianyi nwuma. Todụ abale abi kenedu kiya nya dohi otakada ene ete yi (questionnaire) ki che kpai ibe. Me no ja otila todụ kola duu kume nya ka, ki cheyi ki ya kpukolo me bien.

### **Enwu Chile Komi ane Kwefu Ukolo Ukocheyi Taa?**

Ile kidefu ukolo ukochei che kakini, yanya chabune eneduu, ololonwu chabo kuma deju tamene oga ashibiti ku ma no chukolo ashibiti omo. Omunenwu chekakini ukolo ukocheyi anya chabune ene ekiya chukochei, onwu chi Doctor Efifie Uchechukwu, onwu le chene kiya nya tume ene yi. Ukocheyi ano chabune amone eju'ogba lugbo edeju tamene oga HIV kpai alu kiya deju tola enwu onugo k'oga le ki we mu, ki la no che teju alu kuma d'oda nwu te ojane duu, onwu che Universal Safty Precautions (USP).

### **Otila iche K'omi Kudefu Ukolo Ukocheyii?**

Ich' otila iche ke defu ukolo ukocheyi no. Ichenwu ke ma tene ke chen amu duu neke muwe no. ichenwu ke la chane edohi am'ene ka te efu otakada questionnaire le, ke fu go kake no tene eche gen, eche neke mowo we ta bote ke la cholawe umi ojinwu, amu neke muwen, enwu duu la anya kere bukolo wen.

### **Ichenwu ku n'ene Kun ate, abe k'inenwu kiya ku mi eju, Ene na to Ene?**

Ene kiya chukolo ukoche eyi che Doctor Efifie Uchechukwu ki ya chukoche eyi olafifa amoja unyi ukoche eyi University of Western Cape, South Africa. Todụ abale, ichenwu ku me ne ene duu kume ete, lugbo ukolo ukocheyi, me do oji noba yi 08064621166/07057749499. Email: [efficiency4u@yahoo.com.co.uk](mailto:efficiency4u@yahoo.com.co.uk). Onugonwu la di Haruna Estate, Ganaja Village, Lokoja.

Ila nenwu kiya kume eju lubgo ukolo ukocheyi, me ko otakada ru adresi yi:

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Amene ogbogaga ku ma gwonwu ugbo shekulu eyi yunivasiti eyi Western Cape South Africa, ama dowo to'takada ukolo ukoche eyi ki deyi.



### Appendix 3: Participant Information Sheet (Ibira)



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### INFORMATION SHEET

#### SEVI URUVO OYIKO ONONI?

Osoni ovi oyi jeyi nwu oni aha oyiko Public health ini rehiwe obanyi anahi Western cape university eneme. Yahiwunin kawava buvo tuo oyijenyei nwu onion onusivi anukori Specialist hospital eti kogi lokoja.

Anyi oka ukoro onuwameh ini eyineyini ini aseviti o'zu meka wahuranyi Okwu-akworo (HIV). Uruvo oyi jeyinwu ayi ononi ovika ya sizuo isa anazume ka aza anamu ukoro ini (HCWs) ini KSSH eti Lokoja de kwu ukwu ononi (ukwu-akworo).

#### Sava'kaki mame mado kamabuvo tuo?

Avahuwose kawa siohi veh ini oye ati oyime ini abi enwuzavo. A revahowuse irye inipi-okoro onusuvoza. Abi usireyiononi ovadowu gwu isaji oohu. Oyiko ono ni vanavameh ini aseviti awu, ummuukoro, ume oyituhwo ati ume enezeweyi.

#### OYIBUVOTUO AMI AVOVA KUMIHIYEHE?

Ivameh asuvuri ka ireyi eyirewu vayinewere. Aguvavo evanyi oyi huse ireha, avasi 'ireka' yozikonyikoya awuni enevahusireyi. Isa onivachere inipireyi oyijeyinwu ononi yevasireha awuni tuo.

#### Sevi ayihurine ini oyijeyinwu irei ononi?

Oyisinosisive ireyi newu awu ati azza onyi aihurine. Ayi hurine awu ovika ovahu ni ayi awuni kawa shohi ireyi onivahuse.

Iremonu yo zi koro. Oson ome ka ya si osereyi oyihwo tuo ome ohunotu awunin. Irevami asuvuri kaya me tuo ome Ohuotu awunin. Irevame asuvuri kaya me tinume dasunyi huremvahu ni oyi mabukoro ayi onon arenyi kaye tuo oza enehunayi ivame.

## **SEVI OGU ANA YINI OYI JEYI NWU ONONI?**

oyi jenny nwu anony ame kovoguvo yewunovota ana ohi ani vamoguvo yozo na siohi ete doye okoro memezume koza ohure hi okwu akworo (HIV) doreyi oyime enwuzavo anni. Ini aro eyi oya ka tuoni ovidi eza variogu huni oyikose onon. Da'ama ivamekanini eye oyiche ana ini obanyi oyi karenwau huni okwu akworo ini ahukoro oniri obanyi ana ini oyi dowu aherenwu.

## **OSIVI ABABO KAMA INI OYIJEYINWU ONONI AVIKAMA ZU HUNANI UME ENEZEMEYI?**

Oyi vababo ini oyi jeyinwu ononi evi ababo ovi. Wesi enyi omeka, weresi kawa buvotuo, ware zuhunan ume enezeweyi.

Weyi nani o hunani, enyi oda onazawu, erenyi ogu anavoro turawu ana juwunye.

## **MANYI USIREYI ENI MA HUSE?**

Ozona muruvo oyi jeyi nwu ovi DR EFIFIE UCHECHUKWU inirehi uweh obanyi western cape. Wanyi usireyi nireyi oyi jeyinwu ononi hi dr Efifie Uchechukwu anayi idi Haruna estate, Ganaja village Lokoja. 08064621166, 07057749499 ati [efficiency4u@yahoo.co.uk](mailto:efficiency4u@yahoo.co.uk).

Wa renyi usireyi ini oyiko ononi onosivoro onusiyin or onesiyino ana mojeyinwu ereyi ononi wa nyewu hi:

Prof. Helen Schneider

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Head of Department

University of the Western Cape

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Oyi jeyinwu ononi vana do nwehi huni irehi uwe obanyi ana ini western cape oyi jeyinwu comiti senate.



## Appendix 4: Participant Information Sheet (Okun)



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**E-mail: [soph-comm@uwc.ac.za](mailto:soph-comm@uwc.ac.za)**

### INFORMATION SHEET

#### KINNI EKO YII DALELORI?

Ele yii ni ise iwadi eyiti ile iwe ti ilera apapo (school of public health) tio wani ile eko giga (university) ti western cape.ape o lati kopa ninu ise iwadi yii, nitoripe, oje okan ninu awon osise ile iwosan ipinle kogi alakanse lokoja. Ise re ni ile iwosan lojekio seese fun o lati ko aisan kogboogun (HIV) latari ise re nipase awon iseletionsele. Pataki ise iwadi yii nipe lati se alaye nipa kiko aarun kogboogun (H I V) lenu ise ati lati mo awon nkan tolefaa leerin H C W ninu ile iwosan alakanse (specialist hospital) ti ipinle kogi ni lokoja.

#### KINNI AWON NKAN TIWON YIO NI KINSE TIMOBA FARA MO LATI KOPA?

Won yio bio ni awon ibeere perete nipa imo re ati isesi re si awon oga ajo aabo apapo. Won yio beere lowoore nipa awon ojuse re lowolowo ni igun re(branch). Gbogbo eleyi koniju bi ogun iseju lo. Ise iwadi yii, oma waye ni ile iwosan re ni akoko ise sugbon akoko isinmi ni nigbati oroeloron

#### SE KIKOPAA MI NINU IWADI YII FUNMI NI IDAKONKO(CONFIDENTIAL)?

A o gbiyanju lati fi awom imo tonise pelure pamo lati daabo bo asiri re, a ko ni beere oruko re, bakanna, orisirisi ibeere ni a o fun awon oludahun eyii koni kan o pelu awon olufesi miran.

Ti a ba ko ijabo tabi oro lori iwadi yii oruko re tabi ami idanimi re ko ni wa nibe.

Ni ibamu si ofin isewa a o se afihan awon imo naa fun awon eeyan kan gbogi tabi awon alase lati je ki won mo ewu to wa fun o tabi elomiran ti won ko wobe.

## **KINI AWAN EWU TI O WA NINU IWADI YII?**

Gbogbo ibase po omo emiyan ati isoro si ara eni loni ewu koda bioje die. Ewu ti o wa ninu iwadi yii nipe kio fesi si awon ibeere yii ni akoko ise re, baayi abeere fun idahun re ni akoko isinmi re , akonni ye lati daabo bo o lowo ewu ati llati ran o lowo ti o ba dojuko inira, irori tabi omiran nigbati o ba nkopa ninu ise nibi ta o fi tari resi odo awon onimoinle nipare.

## **KINNI AWON ANFANI ISE IWADI YII?**

Iwadi yii kiise lati ran e lowo taara,sugbon iwadi yii o se iranlowo daada lati se atana aarun kogbogun ati ipolongo ati lati mase(USP).a lerope iwadi yii owulo fun eyiiawuon eyan lojo iwaju niti perete ninu awon(HCWs) ti tu asiri arun kogboogun ni igbati wom sise. Si awujo yii,o ran aabo awuon(HCWs) lati jeki ise won di sise.

Boti wule kori,wa ni iwoyi ti jinna si arun HIV ni ine iwosan ati Pataki igboran sii ajo gbogbo lori abo ati idena arun.

## **SE MO LE FI WA NINU ISE IWAD YII ATI PE SEMOLE DAA IKOPA MI DURO NIGBAKIGBA?**

Ikopa re ninu iwadi je afinufedose.o la fee ma kopa rora ti o ba pinu lati kopa o fun le daaduro nigbakigba.eyii ke yi tiobase ninu re ko sii ijiya fun tabi padanu ere Kankan tio to sie.

## **TI MO BANI IBEERE NKO?**

Dokita EFIFIE UCHECHUKWU ni ile eko ilera gbogbo tii ile eko giga(university) ti western cape ni o ndari iwadi yii,tio ba ni ibeere ni pa iwadi gangan jowo ransi dokita EFIFIE UCHECHUKWU ni HARUNA ESTATE,GANAJA VILLAGE LOKOJA  
08064621166,07057749499 ati [efficiency4u@yahoo.co.uk](mailto:efficiency4u@yahoo.co.uk)

Ti obani ibere nipa iwadi ati eto re gegebi olukopa tabi o fe lati so isoro ti o ti koju nipa nkan to jomo iwadi yii.jowo kan si.

Prof Helen Schneider

School of Public Health

Head of Department



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This research has been approved by the University of the Western Cape's Senate Research Committee



## Appendix 5: Consent form (English)



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**E-mail: [soph-comm@uwc.ac.za](mailto:soph-comm@uwc.ac.za)**

## CONSENT FORM

**Title of Research Project:** *Assessing the awareness and adherence to Universal Safety Precautions (USP) among Health Care Workers (HCWs) in Kogi State Specialist Hospital (KSSH), Lokoja, Kogi State, Nigeria.*

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits.

Participant's name.....

Participant's signature.....

Date.....

## Appendix 6: Consent form (Igala)



### UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

**Tel: +27 21-959 2809, Fax: 27 21-959 2872**

**E-mail: soph-comm@uwc.ac.za**

### OTAKADA IJALI

Oji ukolo ukocheyi che kakini atene k'ama ichenwu kume n'uma eyi edeju tola me iko kume a deju tamene oga ashibiti State Specialist Hospital, alu k'odanwu de ojane duu, onwu che Universal Safty Precautions (USP)

Ma la che menwu duu ki defu ukolo ukocheyi du nerumi eju jali. Ma la mohi ene mi chaka du nwu mi. omi la che ma ukpe emi kun ache efunwu . todun abale, na nya chukpe emi dabalu kedo mi du. Ma no che ka nwu mi ka k'onugo mi kpai ola duu kun aka, manya dowo boma, manya kadufu nwamojan. Ma no che kaneru mi eju kakini, I chenwu ku fu go ka kuna neke chukolo ohi eduyi gen, u che n'oda kun a mowo mi ta kwefu ukolo ukocheyi. Amu duu neke mu min, ofu duu la abu min.

Odumi de: \_\_\_\_\_

Na Dowo Mi to: \_\_\_\_\_

Ojo nwu la dei: \_\_\_\_\_

## Appendix 7: Consent form (Ibira)



### UNIVERSITY OF THE WESTERN CAPE

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**E-mail: soph-comm@uwc.ac.za**

### UWE OYI DO NWEHI

**Uruvo oyi jeyinwu ononi:** *Oyi kaneisi oyiye oni ri oyi me enwu-zavo (USP) ini enwu anukoro aseviti ana mukoro ini specialist hospital (KSSH) ana yi Lokoja ini eti Kogi.*

Arakami ini ekurami oyi ko ononi memeya. Arasiohi usireyi amimi. Mareye simi nyi oyime ini oyibuvotuo oniri madokamabuvotuo. Mareye ka abi reyi ami vayi ni ewere, mareye ka marezu huni oyiko ononi ume enezemeyi, oza ovaye seme di mi hunan, mareyiye anwahi ka ogu ami vajimiha.

Ireha oza ana ka ona me oyi jeyinwu.....

Achere oza ona ka ona me oyi jeyinwu.....

Ekuihi.....

## Appendix 8: Consent form (Okun)



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**E-mail: soph-comm@uwc.ac.za**

**AKORI ISE IWADI YII:** Sisayewo imo nipa ati isesi ikilo nipa abo gbogbo eniyan “universal safety precaution” (USP) awon osise eto ilera (HCWs) ni ile iwosan akanse ti ipinle kogi (specialist hospital) ni orile ede Nigeria.

Won ti se alaye eko yi fun mi ni ede ti mo gbo. Gbogbo ibere mi nipa eko yin ni won ti dahun. ipa ti moma ko ninu eko yii ti ye mi. mosi ti gba lati finufedo kopa ninu eko yii. Oyemi pe gbogbo ohun idanimi mi ma je bi asiri ti akoni fi han eniken. Oye mi pe mole pinnu lati ma kopa mo laisi idi Kankan tabi iberu nkan aburu kan tabi iberu pe kin ma padanu nkankan ti ole to si mi.

UNIVERSITY of the  
WESTERN CAPE

ORUKO OLUKOPA .....

IFOWOSIWE OLUKOPA.....

IGBA(DATE) .....

## Appendix 9: Questionnaire (English)

Study ID \_\_\_\_\_

*Thank you for making out time to respond to this questionnaire. Every response in this questionnaire will be kept confidential and anonymous. You should also understand that honest responses will help to improve practice and protect health care workers in this hospital.*

*For each space provided for in the tables below, please tick (by marking x) against your preferred option after reading the questions. Thanks you.*

### Section A: Demographic Variables

---

1. How old were you as at last birthday?

20 – 29 years	
30 – 39 years	
40 – 49 years	
50 – 59 years	
60 years and above	

2. What is your sex?

Male	
Female	

3. What is the highest educational level that you have attained?

None	
Primary Education	
Secondary Education	
Tertiary Education	
Post-graduate Education	

4. Which cadre of Staff do you work as in this hospital?

Doctor	
Nurse	
Laboratory Staff (Scientists and technicians)	
Dentist	
Attendant	
Others ( <i>please specify</i> )	

5. In which department or unit do you work?

Out Patient Department	
Medical Ward	
Surgical Ward	
Labour ward	
Maternity ward	
Paediatric ward	
Accident and emergency ward	
Theatre	
Laboratory Unit	
Attendant Unit	

6. For how long have you been working in this hospital?

1 – 4 years	
5 – 9 years	
10 – 14 years	
15 – 19 years	
20 years or more	

## Section B: USP Awareness and Knowledge Variables

*{Note for the remaining questions: Personal Protective equipment includes the following; Hand Gloves (wrist and elbow level), Goggles, Chin-length face shields, Face mask, Laboratory coats, Clinic jackets/coats, Surgical gowns and aprons, Surgical boots and Labour room gowns and mackintosh}.*

7. Which of the principles listed below do you know about?

*(You can tick more than one)*

Personal Safe Work Habits	
Hand hygiene	
Needle stick and other Sharp Precautions	
Quality Sterilization and Disinfection of instruments, equipment and work place	
Waste Segregation and Disposal Protocols	
Post-Exposure Management Protocols	
Consistent use of Personal Protective Equipment (PPEs)	

8. Have you heard of Universal Safety Precaution?

Yes	
No	

9. Have you received any formal training on Universal Safety Precaution before?

Yes	
No	

10. Do you believe that Universal Safety Precaution is an effective way to protect doctors, nurses and other Health Care Workers from infection with blood-borne viruses like HIV/AIDS and Hepatitis C Virus?

Yes	
No	

11. Do you believe that we need to protect ourselves against exposure to blood and other body fluids only if the patient has an infectious disease such as HIV/AIDS?

Yes	
No	

12. Do you believe that it is not practical to treat the blood and other fluids of all patients as potentially infectious?

Yes	
No	



13. Should you be informed of the infectious status of the patient before conducting medical procedures?

Yes	
No	

14. Do you believe that worrying about acquiring occupation-related infections can be disregarded if you apply USP appropriately?

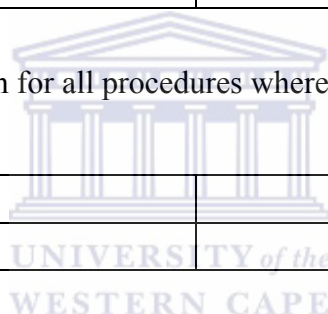
Yes	
No	

15. Should waterproof apron be worn whenever there is a possibility of spillage of blood and other body fluids?

Yes	
No	

16. Should eye protection be worn for all procedures where blood and body fluids may splash?

Yes	
No	



17. Is it safe to use the same pair of gloves for many patients?

Yes	
No	

18. Is it safe to cover broken skin before coming to work?

Yes	
No	

19. Hands should only be washed before and after every procedure that involves direct patient contact?

Yes	
No	

20. Hands should always be washed after gloves are removed.

Yes	
No	

21. Should used needles be recapped?

Yes	
No	

22. Should used needles and sharps be disposed of separately from other waste?

Yes	
No	

23. Blood and other body fluids that has spilled on the ground (eg, in labor room) should be cleaned up immediately?

Yes	
No	

### Section C: USP Adherence Variables.

*Please be reminded that all responses will be kept anonymous and confidential and being honest in your responses will help improve practices and protect staff health in the hospital.*

24. How often do you practice the following principles when needed at your work place?

*(for each principle, tick how consistently you practice it.)*

Principles	All the time	Some times	Never
Personal Safe Work Habits			
Hand hygiene			
Needle stick and other Sharp Precautions			
Quality Sterilization and Disinfection of instruments, equipment and work place			
Waste Segregation and Disposal Protocols			
Post-Exposure Management Protocols			
Consistent use of Personal Protective Equipment (PPEs)			

25. Do you usually practice two-handed recapping of used needle?

Yes	
No	

26. Do you usually wash hands only after removing gloves?

Yes	
No	

27. Do you sometimes use the same pair of gloves for more than one patient?

Yes	
No	

28. Do you usually wash hands after and before contact with patients?

Yes	
No	

29. Do you usually wear waterproof apron whenever there is possibility of spillage of blood and other body fluids?

Yes	
No	

30. Do you always cover your broken skin before coming to work?

Yes	
No	

31. Do you always seek to know the infectious status of patients before providing medical procedures or services?

Yes	
No	

32. Do you sometimes forget to wear eye protection for procedures where blood and other body fluids may splash?

Yes	
No	

33. Do you dispose used needles and others sharps in the same waste container as other wastes?

Yes	
No	

34. Do you only apply USP when attending to patients living with HIV?

Yes	
No	

**Thank you very much for your time.**



## Appendix 10: Questionnaire (Igala)

Study ID \_\_\_\_\_

*Olukoro kenike deko tane mwuwa efoyikide. Enedo kinuma ohi kenyado emikidee. Ema kakini ekoge sha emiki dee nyanya nyoyawa dede kpoo asibiti kide.*

*Eyikenwado mark efi table kidee, kichi 'x'.*

*Olukoro.*

### Section A: Demographic Variables

---

35. Oma odonyunu eshee?

20 – 29 odo	
30 – 39 odo	
40 – 49 odo	
50 – 59 odo	
60 odo and above	

36. Onobilee eshe abe kene kele?

Enekele	
Onobilee	

37. Ngbo eshi school kade?

None	
Primary Education	
Secondary Education	
Tertiary Education	
Post-graduate Education	

38. Olukoronya eshe asibiti kidee?

Doctor	
Nurse	
Laboratory Staff (Scientists and technicians)	
Dentist	
Attendant	
Others ( <i>please specify</i> )	

39. Mgbo eshukolo asibiti?

Out Patient Department	
Medical Ward	
Surgical Ward	
Labour ward	
Maternity ward	
Paediatric ward	
Accident and emergency ward	
Theatre	
Laboratory Unit	
Attendant Unit	

40. Odomonu eshukolo asibiti kide?

1 – 4 odo	
5 – 9 odo	
10 – 14 odo	
15 – 19 odo	
20 odo or more	

**Section B: USP Awareness and Knowledge Variables**

---

*{Enwukidu kpee kema oji ene kanyatume ubiane: Personal Protective equipment includes the following; Hand Gloves (wrist and elbow level), Goggles, Chin-length face shields, Face mask, Laboratory coats, Clinic jackets/coats, Surgical gowns and aprons, Surgical boots and Labour room gowns and mackintosh}.*

41. Efaamenwuka kojemi kidee gbeke madee?

*(eshene kofi tookale)*

Personal Safe Work Habits	
Hand hygiene	
Needle stick and other Sharp Precautions	
Quality Sterilization and Disinfection of instruments, equipment and work place	
Waste Segregation and Disposal Protocols	
Post-Exposure Management Protocols	
Consistent use of Personal Protective Equipment (PPEs)	

42. Eshe numa Universal Safety Precaution?

Eee	
ehh	

43. Isheni training tegba lugbo Universal Safety Precaution before?

Eee	
ehh	

44. Eshe maka kini Universal Safety Precaution kidee adidewa enoga doctors, nurses gbaa maa shukolo omune kumado esibiti kidee enoga ogalo kili (HIV) kpoo Hepatitis C virus?

Eee	
ehh	

45. Eshe maka kini ene kune oga olakili olee dide ole lugbo ebienwu kia kwolan dufu?

Eee	
ehh	

46. Eshe maka kini aneke treat ebie eneduu dabenekini gogabibinwu?

Eee	
ehh	

47. Etini keema kakini egba kwone noga alokili kake treatinwu?

Eee	
ehh	

48. Eshe maka kini shnekee moo USP shekwu udikpe deji lugbo oga bibi genwu?

Eee	
eh eh	

49. Shenkene nejuki ebie enekia shoga akade emi waterproof apron kidee koniola?

Eee	
eh eh	

50. Shenkene nejuki ebie enekia shoga akade eju emu ogigo kidee dudeju?

Eee	
eh eh	

51. Ishenyo kadan hand glove ooka sheku nwama shogaa?

Eee	
eh eh	

52. Ishenyo kudenwu bagbemuma kakwuewo jukolo?

Eee	
eh eh	

53. Ishenyo kagwowa egbadu kamowodu shoo ashogaa?

Eee	
eh eh	

54. Shee maka kini idokpe keegwowie shenkemoo hand glove dubowete?

Eee	
eh eh	

55. Eshema ka kini adole tunyenwu dabi shenkamu du sheku kpa?

Eee	
eh eh	

56. Olekadu sheku ishedukpe kado tunyo efo dustbin umunee?

Eee	
eh eh	



57. Eshee maka kini ebie ki kpo kadane ishe dukpekeli erere?

Eee	
eh eh	

### Section C: USP Adherence Variables.

*Ashumie aria enedu kinuma ola kekaunwa mikide ajoinwu. Ola kekaimi ajoin anyadoshekwa asibiti kidee kpamune mawa asibiti.*

58. Onu monu eshukolo kidee asibiti?

*(efo oyikide emark elu kedu shekule.)*

Principles	Eko gbaa	Eko kaa	Ine Ekonwu
Personal Safe Work Habits			
Hand hygiene			
Needle stick and other Sharp Precautions			
Quality Sterilization and Disinfection of instruments, equipment and work place			
Waste Segregation and Disposal Protocols			
Post-Exposure Management Protocols			
Consistent use of Personal Protective Equipment (PPEs)			

59. Ole kemudu sheku eshadu tunye efuni dabii?

Eee	
eh eh	

60. Egbadu ke emi hand glove du sheku onwu eshegwowo?

Eee	
eh eh	

61. Ishene egbe hand gloves uka sheku naa ama shogaa?

Eee	
eh eh	

62. Esha gwowee kakido ema kado amashoagaa manyi shenke ekolo shekpa eshaagwowo?

Eee	
eh eh	

63. Esha nyi waterproof apron shenwu kene juki ebie kadoola?

Eee	
eh eh	

64. Shenke nagbe ola eshadenwu bejunma kake wojukolo?

Eee	
eh eh	

65. Etini kemo logaa Kunene kake kogwu nyenelee?

Eee	
eh eh	

66. Ishi negba kasha gbenyo edo gigo deju todun egba kepibee ebie eka deju?

Eee	
eh eh	

67. Amole kedu shekwai efo niwaa mgbokiwajo omole eshadutee?

Eee	
eh eh	

68. Egbadu kee attend rama shoga alokili kake shee USP?

Eee	
eh eh	

**Olukolo ekowe kedunwa.**

## Appendix 11: Questionnaire (Ibira)

Study ID \_\_\_\_\_

*Evo ono so metite yi ohi i ayiononi. Enyo oza ana ye suka ezen. Oyi kizeza evoro kayai ka ezeiza or help aza anamukoro ini hospital onon.*

*Arihin mark 'x' ini uhi onuwanyi inyi tables anaizo.*

*Avo.*

### Section A: Demographic Variables

---

69. Irayi awoya?

20 – 29 irayi	
30 – 39 irayi	
40 – 49 irayi	
50 – 59 irayi	
60 irayi and above	

70. Onoru uwaven avi onyenee uvin?

Onoru	
Onyene	

71. Izi school onu no odirema?

None	
Primary Education	
Secondary Education	
Tertiary Education	
Post-graduate Education	

72. Enwu ukoro suwame ini hospital?

Doctor	
Nurse	
Laboratory Staff (Scientists and technicians)	
Dentist	
Attendant	
Others ( <i>please specify</i> )	

73. Ezomo koro inyi hospital?

Out Patient Department	
Medical Ward	
Surgical Ward	
Labour ward	
Maternity ward	
Paediatric ward	
Accident and emergency ward	
Theatre	
Laboratory Unit	
Attendant Unit	

74. Omeme reku onumukoro ini hospital ono?

1 – 4 Irayi	
5 – 9 Irayi	
10 – 14 Irayi	
15 – 19 Irayi	
20 Irayi or more	

## Section B: USP Awareness and Knowledge Variables

*{Irei anavo ini anavo: Personal Protective equipment includes the following; Hand Gloves (wrist and elbow level), Goggles, Chin-length face shields, Face mask, Laboratory coats, Clinic jackets/coats, Surgical gowns and aprons, Surgical boots and Labour room gowns and mackintosh}.*

75. Seye ovete onuye inipan?

*(Wazo se huni konya)*

Personal Safe Work Habits	
Hand hygiene	
Needle stick and other Sharp Precautions	
Quality Sterilization and Disinfection of instruments, equipment and work place	
Waste Segregation and Disposal Protocols	
Post-Exposure Management Protocols	
Consistent use of Personal Protective Equipment (PPEs)	

76. Wara wu Universal Safety Precaution?

Hee	
Eyiye	

77. Ere train awo ini Universal Safety Precaution before?

Hee	
Eyiye	

78. Wado ka Universal Safety Precaution ono vuoze anagu doctors, nurses oneri azanavo anamukoro ini hospital agova senyi uku enwuonon HIV/AIDS and Hepatitis C Virus?

Hee	
Eyiye	

79. Wado ka avoro ka asozee ka oza oni enwuani enenya anyi an okanye onyeko enwuonon HIV/AIDS?

Hee	
Eyiye	

80. Wado ka wezumuku anyke ene nyuko?

Hee	
Eyiye	

81. Wiskawaye oza ono or onyoko duavaa mukoro eresuan?

Hee	
Eyiye	

82. Wado ka wee waame USP eworo kawaku kani wanyuku ini hospital?

Hee	
Eyiye	

83. Wado ka wee use waterproof apron weruka any ava kanyo?

Hee	
Eyiye	

84. Wero ka any ava kanyo avoro ka we kuore?

Hee	
Eyiye	

85. Avoro ka we usewe glove kunyaa yi aza ororo?

Hee	
Eyiye	

86. Avoro ka wa ku unava oku duwa va ve ini koro?

Hee	
Eyiye	

87. Avoro ka wa nyinu vawo waram nkoro or dua va mukoro?

Hee	
Eyiye	

88. Nyi nu vawu were uzee hand gloves.

Hee	
Eyiye	

89. Weree uzeeni orehi avoro ka wa shovarema twahan?

Hee	
Eyiye	

90. Weree uzee orehi uwene ta ereyin?

Hee	
Eyiye	

91. Uweruka inyi anya ana ini tezi ejijo?

Hee	
Eyiye	

### Section C: USP Adherence Variables.

*Ariyi ya tamawai ka abeso onowaka enyi ozana wu. Suwa ka ase go aza ana ini hospital ate aza anumukoro ezo.*

92. Omeme me mi senen awokoro awu?

*(Enaa isonon umeme lowa.)*

Principles	Abu me	Ume nye	Eyiye
Personal Safe Work Habits			
Hand hygiene			
Needle stick and other Sharp Precautions			
Quality Sterilization and Disinfection of instruments, equipment and work place			
Waste Segregation and Disposal Protocols			
Post-Exposure Management Protocols			
Consistent use of Personal Protective Equipment (PPEs)			

93. Owa ma ko orehi ahan were lotta?

Hee	
Eyiye	

94. Owa ma nye novawu wara tu gloves?

Hee	
Eyiye	

95. Uwere uzei gloves onya yi aza oruru?

Hee	
Eyiye	

96. Uwa manyi no vo awo do wawa wa mavukoro or wara mukoro?

Hee	
Eyiye	

97. Uwe me uzei waterproof apron uwei roka anya va kanyo?

Hee	
Eyiye	

98. Wa nyi unava owa ma sisa kwo duwa va vi ozukoro?

Hee	
Eyiye	

99. Uwe ru ka avoro kawayi uku oni ozono nyi duwe ve nyimukoro?

Hee	
Eyiye	

100. Ayi wee mehujen ka avoro ka wekuore weroka anya va kanyu?

Hee	
Eyiye	

101. Werei uzei orehi avoro ka weh neta ti ezo ni isanavo tu?

Hee	
Eyiye	

102. Owaa me uzei USP eji weeri aza ananyi oku HIV?

Hee	
Eyiye	

**Avoo yi ume onu sey.**



## Appendix 12: Questionnaire (Okun)

Study ID \_\_\_\_\_

*Modupe pe edanwu belemi. Yahoni yee gbo imbayo nibi. Obaa otito iyem mu loluha hahi hospital ationo osiselibe.*

*Muya danwu ninu 'x' inubere itodo.*

*Ese.*

### Section A: Demographic Variables

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103. Iyo modu weha?

20 – 29 odu	
30 – 39 odu	
40 – 49 odu	
50 – 59 odu	
60 odu and above	

104. Suo obieri abi okunri?

Okunri	
Obieri	

105. Ki ewe wo ka gbayi?

None	
Primary Education	
Secondary Education	
Tertiary Education	
Post-graduate Education	

106. Ki sere yi hospital?

Doctor	
Nurse	
Laboratory Staff (Scientists and technicians)	
Dentist	
Attendant	
Others ( <i>please specify</i> )	

107. Ki se wesi hospital?

Out Patient Department	
Medical Ward	
Surgical Ward	
Labour ward	
Maternity ward	
Paediatric ward	
Accident and emergency ward	
Theatre	
Laboratory Unit	
Attendant Unit	

108. Eya odu weti sise lo hospital?

1 – 4 odu	
5 – 9 odu	
10 – 14 odu	
15 – 19 odu	
20 odu or more	

## Section B: USP Awareness and Knowledge Variables

*{Mbaye mo nib ere nkwu: Personal Protective equipment includes the following; Hand Gloves (wrist and elbow level), Goggles, Chin-length face shields, Face mask, Laboratory coats, Clinic jackets/coats, Surgical gowns and aprons, Surgical boots and Labour room gowns and mackintosh}.*

109. Ki ye momi pa?

*(Eromu ju eyokon)*

Personal Safe Work Habits	
Hand hygiene	
Needle stick and other Sharp Precautions	
Quality Sterilization and Disinfection of instruments, equipment and work place	
Waste Segregation and Disposal Protocols	
Post-Exposure Management Protocols	
Consistent use of Personal Protective Equipment (PPEs)	

110. See eti gbo likpa Universal Safety Precaution?

Beeko	
Eyee	

111. See eti kweko koko Universal Safety Precaution before?

Beeko	
Eyee	

112. See egbagbo Universal Safety Precaution ooda bobo dokita, nurses ati onyinwoi sise ninu hsopiat lati da bobo inu eso bii HIV/AIDS and Hepatitis C Virus?

Beeko	
Eyee	

113. Sodi gbaa laison gbani HIV ato da bobo rayani?

Beeko	
Eyee	

114. Saa ronri eje gbogbo alaisan mikpe oba alaison?

Beeko	
Eyee	

115. Se wee fe mo bi alaison va naison wotu tonjure?

Beeko	
Eyee	

116. Sewo ogbabo kpe obalo USP watini idaba boya weni aisan?

Beeko	
Eyee	

117. Sowe ewo aso waterproof apron tuo obarowipe eje elaison tabowo?

Beeko	
Eyee	

118. Sowe robi owo ode igo oju tuo oroyi ipe eje alaison tabowo?

Beeko	
Eyee	

119. Shee robi elo ibowo eyokon lonee?

Beeko	
Eyee	

120. Shoyee adee ojuju ado ghaa ebi se?

Beeko	
Eyee	

121. Sewoo fowo wo tomo wote alaisan abi aba tonju alaisanton atofowo?

Beeko	
Eyee	

122. Soyee afowo egba abayoo ebowo?

Beeko	
Eyee	

123. Soyaa daa padaa ninu kpali abati luton?

Beeko	
Eyee	

124. Se wee wabere nu nunu aiton ibi wedaa dotihi?

Beeko	
Eyee	

125. See emo luwipe eje ba titaile oyi oni oju ese?

Beeko	
Eyee	

### Section C: USP Adherence Variables.

***Modupe pe edanwu belemi. Yahoni yee gbo imbayo nibi. Obaa otito iyem mu loluha hahi hospital ationo osiselibe.***

126. Kabi we sesee onwe se hospital?

*(for each principle, tick how consistently you practice it.)*

Principles	Gba gwogwo	Gba koko	Laye
Personal Safe Work Habits			
Hand hygiene			
Needle stick and other Sharp Precautions			
Quality Sterilization and Disinfection of instruments, equipment and work place			
Waste Segregation and Disposal Protocols			
Post-Exposure Management Protocols			
Consistent use of Personal Protective Equipment (PPEs)			

127. Sewee de mabere kpadaa inyu kpale oba tiluton?

Beeko	
Eyee	

128. Sodi gba obati yuwore enu bowo oto fo wore?

Beeko	
Eyee	

129. Sewee lubowo ele eyo kon juwe ne ekono?

Beeko	
Eyee	

130. Sewee fo wo otumo alaisan eti bowu ogba kpari wo tu fo wo?

Beeko	
Eyee	

131. Sewee wa son waterproof apron obaro biya eje eyo dotiri?

Beeko	
Eyee	

132. Sewee webu ojuju re wo tugha gaye ebi sa?

Beeko	
Eyee	

133. So di gba alaisan va naisan wotun ton jure?

Beeko	
Eyee	

134. Sewee dee gbagbee wode go ojule wo bar obi kpee eje yeta ojule?

Beeko	
Eyee	

135. Shee webei ju abere hikule ibibi wedee da owodo tunkpi e?

Beeko	
Eyee	

136. Se igba wobe ton juru alaison HIV egbayi ekwu lo USP?

Beeko	
Eyee	

**Esee goo gon.**

**Appendix 13: Letter of ethical clearance.**

# **KOGI STATE SPECIALIST HOSPITAL**

**P. M. B. 1146, LOKOJA.**



Our Ref: \_\_\_\_\_

Your Ref: \_\_\_\_\_

Date: **8/4/2016**

**Dr. Efifie Uchechucwu Emmanuel**

School of Public Health

University of the Western Cape

Private Bag x17 Bellville 7535

South Africa.

Sir,

**RE: ASSESSING THE AWARENESS AND ADHERENCE TO UNIVERSAL SAFETY PRECAUTIONS (USP) AMONG HEALTH CARE WORKERS (HWC'S) IN KOGI STATE SPECIALIST HOSPITAL LOKOJA, KOGI STATE, NIGERIA**

The Research and Ethical Committee of Kogi State Specialist Hospital, Lokoja at its sitting on 5/4/2016 having received, studied and considered your application for ethical clearance on the above proposal, is pleased to inform you that approval has been granted for your research.

2. We wish you the best in your endeavours.

**Dr. Akpojaro Ikpen**

Chairman

Ethics & Research Committee

**Y. Y. Okolo**

Secretary

Ethics & Research Committee