

**ENSIGN COLLEGE OF PUBLIC HEALTH KPONG
EASTERN REGION, GHANA**

**ASSESSMENT OF THE PREVALENCE OF NEEDLESTICK INJURIES AMONG HEALTH
CARE WORKERS IN THE CATHOLIC HOSPITAL, BATTOR IN THE NORTH TONGU
DISTRICT OF VOLTA REGION, GHANA**

BY

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DEDICATION

I dedicate this work to my ward In-charges, Sister Faustina Fantevi and Sister Alberta Ahiable for the support they gave me when things became difficult for me.

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OPERATIONAL DEFINITIONS

Needle stick injury (NSI): An accidental wound from a needle (or any sharp) containing another person's blood or body fluid.

Sharps injury (SI): A skin-penetrating stab wound caused by sharp instruments in a health care facility.

Blood borne infection: an infection transmitted through contact with the blood (serum or plasma) of an infected person.

Occupational exposure: A reasonably anticipated skin, eye, mucous membrane, or contact with blood, bodily fluids, or other infectious materials that may result from a routine duties.

Blood borne pathogens: Disease causing microorganisms that are transmitted through human blood and cause diseases in humans.

Health Care worker: someone who works in a hospital or health center.

Exposure: Coming into contact with a harmful substance or object.

Hazard: The risk of a material or a situation to cause injury or harm to people's health, or loss of property.

Incidence: The number of new cases or conditions that develop in a given period of time.

Medical sharps: Objects used in a health facility that can penetrate the skin and include but not limited to needles, broken glasses, scalpels, broken capillary tubes.

Personal protective equipment (PPE): Equipment designed to protect health care workers from work place injuries.

Prevalence: The number of cases of disease including old and new that are present in a particular population at a given time.

Post-exposure prophylaxis (PEP): The immediate medications administered to health care workers after exposure to infections.

Recapping: The act of putting the protective sheath of a needle back.

Risk: A situation involving exposure to injuries.

Safety device: An equipment that reduces injuries in health care facilities.

ABBREVIATIONS /ACRONYMS

AIDS- Acquired Immune Deficiency Syndrome

ART- Anti-Retro-viral Therapy

BECE- Basic Education Certificate Examination

BPS-Blood borne Pathogens Standard

CDC-Centre for Disease Control and prevention

EU-European Union

HBV-Hepatitis B Virus

HCV-Hepatitis C Virus

HCWs-Health Care Workers

HIV-Human Immunodeficiency Virus

IRB-Institutional Review Board

IPC-Infection Prevention and Control

IV-Intravenous

MSLC-Middle School Leaving Certificate

NHS-National Health Service

NSIs-Needlestick Injuries

NSSs-Needlestick or Sharps Injuries

OSHA- Occupational Safety and Health Administration

PEP-Post Exposure Prophylaxis

RCN-Royal College of Nursing

USA-United States of America

USD-United States Dollar

US- United States

WHO- World Health Organization

ABSTRACT

Background

Over the years, health care workers have been exposed to blood borne infections like HIV, HCV and HBV as a result of needle stick injuries. The prevalence of needle stick injuries keep on increasing among health care workers, hence its public health importance. This study aims at assessing the prevalence of needle stick injuries among health care workers in the Catholic hospital, Battor in the Volta region of Ghana and how they cope with it economically and psychologically.

Methodology

A cross sectional study design with the use of structured questionnaire were conducted among health care workers in the Catholic Hospital, Battor, Ghana. Questionnaires were administered to all health care workers who work in patient care areas (N=203) at the facility. A mixed method analysis (qualitative and quantitative) was conducted to assess the prevalence, associations, and burdens of needlestick injuries.

Results

Overall, the prevalence of needle stick injuries among health care workers in the Catholic hospital, Battor was 34.16%. Of these, there are 68.12% females and 31.88% were males.

Work place pressure was the only statistically significant variable (55.07%, p value=0.00) associated with needle stick injuries in the hospital. A qualitative analysis of the study shows anxiety and fear as the main psychological burden of health care workers who had needle stick injuries.

Economically, health care workers spent between GH¢ 500.00 to GH¢1000.00 as extra cost on food during the period of taking the prophylaxis.

Conclusion

The prevalence of needle stick injuries in the Catholic hospital, Battor is increasing (7 cases from January 2014 to December 2015 were reported and 69(34.16%) cases from January 2016 to December 2018) even though at a lower rate than studies from Sub-Saharan Africa and other parts of the world.

Underreporting is also a major problem identified by the study (42.55%). Health care workers also spend about GH¢500.00 to GH¢1000.00 on food items during the period of taking the post exposure prophylaxis. Health care workers experience fear and anxiety as psychological burden.

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CHAPTER 1

INTRODUCTION

1.1 Background Information

Needle stick injuries are wounds caused by blood collection intravenous devices and sharps such as hypodermic needle, or needle used to connect part of intravenous delivery system (Gupta et al, 2015). Many health care workers are at increased risk of needle stick injuries because of the location they work. Health care workers in the operation theatre, labour wards, emergency ward, laboratories, wards, injection rooms and cleaners are at a higher risk, owing to the incorrect disposal of sharp objects most especially needles. Health care workers are at risk of sharp injuries and subsequent infection by more than 40 blood borne pathogens or species which leave them with both short term and long term medical consequences (Sossai et al., 2016).

Needle stick injuries are among the most widespread work-related accidents, with needles and disposable syringes as the primary sources of injury. The risk of contracting Hepatitis B Virus (HBV), Hepatitis C Virus (HCV) (Prüss-Üstün et al, 2005) and Human Immunodeficiency Virus (HIV) infection attributable to contact with infected blood has been estimated to be about 30%, 0.5%, and 0.3%, respectively.

An estimated 900,000 blood borne infections occur among health care workers in Italy annually with nearly 96,000 needle stick injuries (Sossai et al., 2016). Needle stick injury (NSI) is a major occupational health and safety issue encountered by healthcare

professionals globally. Globally, more than 35 million Health Care Workers face the danger of sustaining a percutaneous injury with a contaminated sharp object every year. Centres for Disease Control and Prevention (CDC) estimates that nearly 385,000 needles and sharps-related injuries occur every year to HCWs in the United States (Bukina & Dubovik, 1999).

These figures prompted the US and the European Union to enact laws on monitoring and preventing needle stick injuries. In recent years, health care authorities, particularly the U.S. have focused their attention on identifying and utilizing proper medical devices to prevent needle stick injuries and other sharp injuries in the workplace. This was contained in their 'Public Law, September 19, 2000 (Sossai et al., 2016). It is projected that in United States approximately 385,000 needle stick and sharp related injuries occur every year among health care workers (Afridi et al, 2013). Europe records an estimated 1 million needle stick injuries among health care workers each year and as a result a decision was taken as contained in Directive 2010/32/EU, approved on May 10,2010 (Kosgeroglu et al, 2004) for member countries to implement a global strategy to prevent occupational exposure to blood borne pathogens in health facilities due to needle stick and sharp injuries, including the adoption of devices incorporating safety features, on the basis of risk assessment (Himmelreich et al., 2013)

Sharps injuries are common within surgical practices and carry the high risk of transmission of blood borne infections. The risk of infection for health care personnel depends on the prevalence of disease in the patient population and the nature and frequency of exposures of health professionals. Surgeons and surgical trainees are at different risk due to the nature and frequency of the procedures they perform. Although most surgeons are now adequately vaccinated against hepatitis B, there is no vaccine for

the human immunodeficiency virus (HIV) or hepatitis C which represents a global pandemic. Occupational blood exposure is an even more significant problem in developing countries than in developed ones. High-risk behaviours, such as lack of compliance with universal precautions, use of two-handed needle recapping, improper needle disposal, unsafe injection practices, and lacking hepatitis B vaccination are some of the problems identified in developing countries.(Lakbala et al, 2014). With such high rates of transmission of blood borne diseases amongst health care workers due to needle stick injuries, it is important to look out for prevention strategies in order to limit such incidents. In spite of having more than 90% of blood borne infections among health care workers in developing countries, most African countries do little in this regard (Afridi et al, 2013).

1.2 Problem statement

Health professionals such as nurses, midwives, doctors, laboratory staff, cleaners, ward assistants, Orderlies and students on vacation attachment are at risk of sustaining needle stick injuries in the course of their work. These injuries expose them to blood borne infections like hepatitis B, C and HIV/AIDS (Prüss-Ustün et al, 2005). Many health care workers in the line of their duties often get pricked by hypodermic needles and other sharps. These injuries expose them to various infectious diseases including HIV/AIDS, hepatitis B, and hepatitis C which pose one of the greatest risks of occupational exposure among health care workers (Chalya et al., 2015). Most health care workers in addition to the risk of infection with blood borne pathogens through needle stick are also at risk of the side effects of medications used for post exposure prophylaxis as well as the psychological trauma and the uncertainty of acquiring infection (Gorman et al., 2013; Bhardwaj et al., 2014). An observation made at the Anti-Retro-viral Therapy

(ART) centre of the Catholic Hospital, Battor revealed that most health care workers who access post exposure prophylaxis (PEP) always have some side effects of the medications, and are given excuse duty for the period of treatment which results in loss of productive working time.

In Ghana, data on needlestick and sharps injuries are almost non-existent. Under reporting and lack of documentation is a major challenge. As a result of lack of data authorities are unable to quantify the impact of these exposures for policy directives. It is very easy to ignore a problem where there are few or no data to prove the existence of the problem, and since these incidence are not documented it could be a silent health hazard (Vaz, 2009).

The low rate of reporting in some jurisdictions have been attributed to lack of awareness of appropriate procedures and the perceived low risk of transmission of infections (Waljee et al, 2013). It is therefore important for our hospitals to develop occupational health and safety departments and standard operating procedures for reporting and management of needle stick and sharps injuries and ensure continuous surveillance (Qazi et al., 2016).

The Catholic hospital, Battor has an incident book for reporting needle stick injuries and other incidents such as falls, theft, assaults, and others that are related to the work but most of the injuries from needle stick are not recorded in the book for record keeping. This is of interest to the researcher and in view of this, the study intends to assess the universal precautions among health care workers in the Catholic hospital, Battor and also focus on the prevalence of needle stick injuries and the management procedures in place at the hospital.

1.3 Rationale of the Study

This study seek to assess the prevalence of needle stick injuries in the Catholic hospital, Battor, between January 2016 to December 2018. This became necessary because records from the incidence books from the various units showed that 3 cases of needle stick injuries occurred in 2014 and 4 cases in 2015 and between January 2016 to the time of the study, the cases kept increasing. So the researcher sort to find out why there is an increasing number of health care workers having the needle stick injuries in the hospital in spite of being trained in infection prevention and control which covered injection and sharps safety, why there is under reporting of needle stick injuries and how they cope with it economically and psychologically.

1.4 Conceptual framework

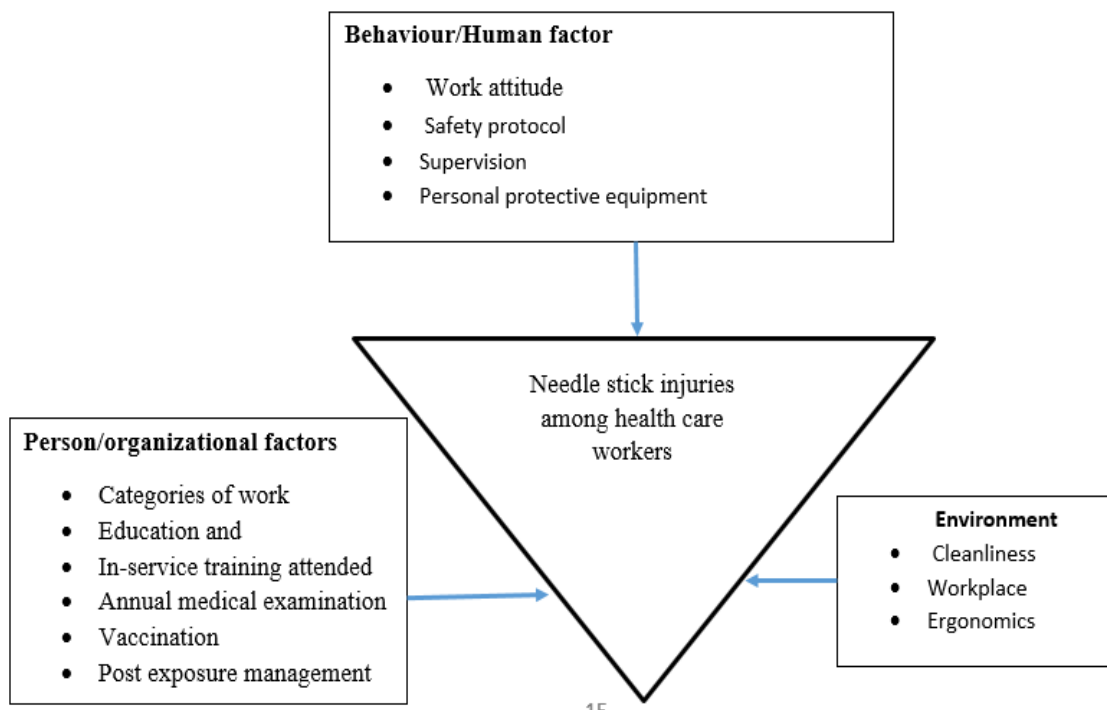


Figure 0.1 conceptual framework of needle stick injuries

This concept was adopted and modified from (cf. Robertson, 1983) to suit the researcher's aim of depicting how these three factors, behaviour/human factor, person/organizational factors and environment interrelate to cause needle stick injuries. While Robertson's examples are specific to traffic safety, the concepts are relevant to all problem domains that can benefit from behaviour change. The responses people exhibit or fail to exhibit in order to prevent potential injuries are represented by the behaviour/human factor side of the triangle as shown in Figure 1. Whereas a change in the environment can result in long-term protection, person/organizational factors such as categories of work, education, in-service training attended, annual medical examination, vaccination, and post exposure management need to be repeated many times for effective NSI control. Like environmental factors, behaviours can be observed, recorded objectively and subsequently modified to reduce injury potential. Changes in the environment (e.g. Cleanliness, workplace, ergonomics) or the person, for example through training or experience influence behaviour change with varying degrees of probability or certainty (Geller et al., 1990).

Needlestick injuries in our health facilities are caused by these three factors independently, however, environmental factors such as cleanliness, workplace and ergonomics have direct link with human factors such as education, In-service workshop attended, work attitude, categories of work and vice versa. In other words, person/organizational factors such as safety protocols, supervision, personal protective equipment, post exposure management, vaccination and annual medical examination for staff have a direct link with behaviour/human factors to cause NSIs (Geller et al., 1990).

1.5 Research Questions

The study was done based on the following questions.

- What is the prevalence of needle stick injuries among health care workers in the Catholic Hospital, Battor?
- How often is needle stick injuries reported in patient care areas in the Catholic Hospital, Battor?
- What are the management protocols of needle stick injuries in the Catholic Hospital, Battor?
- What are the financial and psychological burdens of needle stick injuries on the health care worker?

1.6 General Objective of the study

The general objective of this study is to assess the prevalence of needle stick injuries among health care workers in Catholic Hospital, Battor and how they cope with such injuries economically and psychologically.

1.7 Specific Objectives

The specific objectives of the study are to:

- Describe the demographic characteristics of health care workers in the Catholic Hospital, Battor.
- Assess the prevalence of needle stick injuries in the Catholic Hospital, Battor
- Analyse the risk factors associated with needle stick injuries in the Catholic Hospital, Battor.

- Determine the preventive measures put in place in the Catholic Hospital, Battor to minimize needle stick injuries.
- Describe the economic and psychological burden that needle stick injuries pose to health care workers.



Figure 0.2 The map of Battor

1.8 Profile of the study area

Catholic hospital, Battor (fig. 1.2) was founded in September 1956 by Most Rev. Joseph Oliver Bowers, emeritus Bishop of Accra Diocese with a German Doctor Hildegard Birkhahn. It was to him that Torgbe Dzekley I, the paramount chief of Battor Traditional area of blessed memory, made an appeal for a hospital to cater for the health needs of his subjects as they accepted the Catholic faith. This was in 1953 when the Bishop made his maiden visit to the area.

After that encounter, a series of negotiations ensued and not long, permission was given for wound dressing station and a maternity clinic. In 1957 four Dominican sisters in the persons of Sister Victoria Koch, Sister Inclinata Harter, Sister Ederludis Berberich and Sister Caritas Eisenbarth came to start the hospital in Battor as nurses. The hospital has since developed to be one of the best hospitals in the Volta region serving people from all over the country and some neighboring African countries.

The hospital is now a 245 bed capacity referral center and has a well-equipped theatre, outpatient department, ophthalmic unit, nose and throat unit, dental clinic, psychiatric unit, nutrition unit, and a yet to be commissioned accident and emergency unit.

The hospital currently has 11 doctors, 5 house officers, 6 physician assistants, 140 nurses and midwives, 2 nutrition officers. 90 other staff who also work in other departments of the hospital.

1.9 Scope of the Study

This study was restricted to all health care workers who work at patient care areas in the Catholic hospital, Battor in the North Tongu district of Volta region, Ghana. This is because they come into direct contact with patients and materials for their care.

The researcher used a mixed method to explore the challenges these health care workers go through with needle stick injuries taking into consideration their financial and psychological burdens. Quantitative method was used for the health care workers at patient care areas and quantitative method used for those who had needle stick injuries.

The researcher also looked at causes of needle stick injuries, the care given to staff after the exposure and ways to minimise needle stick injuries in our health facilities.

1.10 Organization of Report

The study is organized into six (6) main chapters. These include Introduction, Literature Review, Methodology, Results, Discussion, Conclusions and Recommendations.

The first chapter, (introduction), gives an overview of the general introduction and background of the study. It introduces the topic of the study. Also, the problem statement, the rationale and the conceptual framework of the study is also discussed in this chapter.

The research questions to be answered at the end of the study is also outlined in the study. This is followed by the objectives of the study (general and specific objectives). Finally the profile of the study area, scope of the study and organizational structure of the work.

The second chapter, the literature review gives a detailed description of related research work. It assesses past literature about the challenges associated with needle stick injuries among health professionals, causes, post exposure prophylaxis and ways to minimize needlestick injuries.

The third chapter outlines the methodology that was employed in the study, sample size, data collection tools and tools for analysis.

Chapter four outlines relevant results of the study following the analysis of the collected data. Presentation of study results are in the form of graphs, tables and written text.

Chapter five of the study discusses the results obtained with the research questions in mind, objectives and the literature review as presented in chapter two.

Finally, Chapter six gives recommendations to stakeholders and interested parties based on results and discussions made in the previous two chapters.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter gives an in-depth insight on various works of different authors on needle stick injuries that are relevant to this study.

2.2 Occupational hazards in health care delivery

Hospital settings have many potential hazards that can affect the health of employees and consequently their work output. These hazards include; biological, chemical, ergonomics, hazardous drugs, radiations, stress and violence (Wilburn & Eijkemans, 2003). These can only be controlled or managed when identified as hazards. A needle stick or sharps injury (NSSI) which is also a form of hazard for health care workers can be described as any percutaneous injury that results in piercing of the skin by a needle or other sharp object or device, typically occurring during the use of the device and before disposal (Beyera & Beyen, 2014). Occupational risks related to exposure affects the quality of care delivered as well as health care workers safety and wellbeing. As a result exposed workers experience substantial fear, anxiety and emotional distress that can result in occupational and behavioral change. (Chalya et al., 2015)

Needle stick and sharps injuries (NSSIs) are one of the most common physical hazards, with the consequent economic and psychological effects for many healthcare workers. Needle stick and sharp injury is rated as one of the top most exposures healthcare workers encounter in the discharge of their duties.

HIV epidemic actually stimulated attention and occupational health regulations to protect health care workers from exposure to blood borne pathogens, however, hepatitis is much more prevalent and more infectious than HIV. (Kommogldomo, 2016)

Occupational health and safety among health care workers is very crucial to quality health care delivery. Needle stick and sharps injury remains the major source of transmission of infectious diseases among health care workers. (Kommogldomo, 2016)

This is an occupational safety concern which needs to be addressed to prevent the transmission of various blood borne diseases among health care workers.

The people most at risk of occupational exposure to needle stick injury are in developing countries. In most of these countries, there is scarcity and lack of standard protocols in reporting needlestick injury. According to Beyera & Beyen, 2014, absence of safety instructions and work guidelines is a major factor influencing needle stick injury. Their study recorded high prevalence of needlestick injury which was attributed to inadequate occupational health and safety services. According to (Gholami et al, 2010), their study revealed that the high occurrence of NSSIs was due to high rate of ignorance and apathy. Their research findings therefore recommended appropriate education and other interventional strategies by the hospital infection control committee to minimise or control needle stick and sharp injuries.

2.3 The global picture of needlestick injuries

In Canada, Italy, Spain and the United States of America, for example, percutaneous exposures accounted for 66%–95% of all occupational exposures to blood borne

pathogens and, of these, needle stick injuries accounted for 62%–91% (Prüss-Üstün et al., 2003).

The United States Congress passed the Needle stick Safety and Prevention Act of 2000 in order to expand and clarify the language used by the occupational safety and health administration (OSHA) in the BPS relating to needle sticks and sharps safety. In addition to requiring OSHA to revise the BPS, the law required:

- (1) HCWs providing direct patient care be included in the process of evaluating and selecting safety engineered needles and sharps.
- (2) Employers document evaluation and implementation of safety-engineered devices.
- (3) Employers update their evaluation plan annually to reflect the consideration of new technology.
- (4) Employers maintain a sharps injury log documenting the types of devices causing injuries and an explanation of the circumstances of each injury (McGuire-wolfe, 2013).

2.4 Needle stick injuries in Africa

According to a research by (Nsubuga & Jaakkola, 2005) on needle stick injuries among nurses in Sub-Saharan Africa, countries in the region have a heavy burden of HIV/AIDS and other blood borne infectious diseases and high usage of injections. It was also identified that lack of safe devices in hospitals because of the low expenditure on health care and occupational safety and health services and a high ratio of patients to health care worker contribute to a work environment predisposing the health care workers to a great risk of needle stick injuries, and consequently, to blood borne infections. Only a

few studies have been published on needle stick injuries from this area, or from developing countries in general (Mcguire-wolfe, 2013), although 90% of needle stick injuries occur in developing countries. Among the few studies conducted, none has specifically addressed the risk factors for needle stick injuries among the health care workers.

2.5 Needle stick Injuries in Ghana

Ghana like many developing nations do not have national data on needle stick injuries even though some individuals have done some works in this area. These data are however important for policies on occupational health exposure of healthcare workers.

Ghana introduced the Occupational Health and Safety Policy Guidelines for the health sector in June 2010, but that has not helped with any national data on NSIs.

International Society of Infectious Diseases, Small Grants Program Final Report by Dr Alex Owusu. This was a study of the epidemiology of blood-borne pathogens and needle stick injuries among health workers in Ghana. This study was aimed at assessing the frequency of needle stick injuries and exposure to blood/body fluid among HCWs. The response rate was about 50%, with about 2000 questionnaires being evaluable (Phillips & Jagger, 2008).

2.6 Factors associated with needle stick and sharps injury

The circumstances in which needle stick and sharp injury occurs depend partly on the type and design of the device. Also, apart from the risks associated with the device

characteristics, needle stick injuries have been related to certain factors of work practices such as;

1. Recapping of needles.
2. Passing device from one person to another.
3. Transferring body fluids into containers.
4. Failing to properly dispose of used needles.
5. Collision between workers.
6. Hidden needles in bed sheets or linens.
7. During waste collection and disposal.
8. Withdrawing needle from rubber.
9. Protruding needle from sharp box (Hambridge, 2011, Project, 2005)

Needle stick and sharps injuries are usually caused by simple and preventable mistakes in handling needles and sharp devices. Most of these injuries happen before or during disposal process. Some of the causes can be summarized as ; rushing, anger, distraction and multiple attempts to complete a procedure, healthcare worker fatigue, uncooperative patients or teams affected by staff shortage (Ling et al, 2015)The estimated prevention of needle stick and sharps injuries through safety devices depends largely on the kind of activity and availability of resources and organisational controls across various health care workers.

2.7 Risk factors of needle stick injuries

Risk factors associated with NSIs have been categorized into two groups: modifiable and non-modifiable. Non-modifiable risk factors for NSIs are conditions that cannot be deliberately altered such as age and sex. Modifiable risk factors include hospital care setting, poor working environments such as long working hours, understaffing, inadequate needle disposal procedures and negligence on the part of health care workers.

2.8 Risk of occupational exposure

Health Care Workers (HCW) are at increased risk of getting needle stick injuries and connected to blood borne infections including hepatitis B, hepatitis C and HIV. It is estimated that in United States nearly 385,000 needle stick and sharp-related injuries occur every year to healthcare workers in hospital settings (Centre for disease control and prevention).

According to WHO, 2002; World health report, Geneva, globally, out of 39.5 million health care workers, three million experience percutaneous exposure to infectious diseases each year and 40% of hepatitis B, and C and 2.5% of HIV/AIDS in HCWs are attributed to needle stick injuries. With such high rates of transmission of blood borne diseases among HCW due to needle stick injuries, it is prudent to devise prevention strategies in order to limit such incidents. While more than 90% of blood borne infections occurs among HCW in developing countries reporting of such events is rarely done (Afridi et al., 2013).

The two most common causes of needle stick injuries are two handed recapping and the unsafe collection and disposal of sharps waste. The WHO estimate of the global burden

of disease from occupational exposures to contaminated sharps to health care workers is based on the number at risk of exposure, the annual number of sharps injuries, and the prevalence of blood borne disease in the worldwide population (Wilburn & Eijkemans, 2003).

2.9 Ways to reduce the risk

Ways of reducing the risk of needle stick injuries include:

Health workers who may come in contact with blood or body fluids should receive hepatitis B vaccinations.

Follow all safety procedures in the workplace.

Regularly undertake safety refresher courses. Minimise your use of needles.

Remember that latex gloves don't protect you against needle stick injuries.

Don't bend or snap used needles. Never re-cap a used needle.

Place used needles into a clearly labelled and puncture proof sharps approved container (Meitis, 1989).

2.10 How to manage needle stick injuries

It is very important to follow defensive measures when an NSI occurs. The following steps explain how to respond to an NSI or deal with it when it happens to a health care workers.

The first step is “encouraging bleeding at the site of the injury by squeezing out the excess blood to encourage bleeding, in order to minimize the introduction of the virus (if any) on site and to be expelled out of the injured body, rather than encouraging entry into the bloodstream.

This step includes washing with liquid soap and running water the injury site of the needle stick or sharp injury.

The next step is checking HIV, HBV, and HCV status for both the affected employee and the person whose needle caused the injury.

Then take a post exposure prophylaxis, or PEP if possible in an hour of the injury if the person is reactive to HIV, HBV, and HCV and the worker affected status is negative.

The rate of transmission can be reduced if anti-retroviral drugs are given soon after the exposure. It is only hepatitis B that has an effective vaccination but HCV and HIV do not have. After that, testing for follow up and medical supervision of the affected worker improvement have to be done regularly.

Managing the Risk of Needle stick Injury requires retesting for hepatitis C after six weeks of the needle stick injury and again retesting for HCV antibodies and elevated liver enzymes at four to six months. For the exposure of HIV, retesting is encouraged at six weeks and once more at three, six and twelve months for HIV antibodies. The frequency of the tests depends on the risk of spread.

Finally, reporting the incident. It is vital to inform your employer about the injury that occurred, and the collected data may help in improving the practices at the workplace for future safety of everyone (Mustafa, 2012). The management steps are further broken down as follows;

- Encourage bleeding at site of the injury.
- Wash the wound.
- Dry and cover the wound.
- Flush splashes of blood on other parts of the body with water.
- Irrigate the eyes with saline or clean water
- Remove and change potentially contaminated clothing
- Seek medical attention immediately.
- Determine whether HIV and other blood borne exposure is possible.
- Report the incident
- Have follow up testing and medical check-up.
- Have a plan of action for needle stick injuries
- Ensure safe working practices in a health care facility at all times.
- Ensure safe working practices in other workplace environments.
- Avoid unnecessary distractions when working with needles and other sharps.

2.11 Attitude and Reporting of NSI

Under reporting of NSI is also a major problem. In the United States, approximately 45 to 75 % of all needle stick injuries affecting health care workers are not reported (Lakbala et al., 2014). Affected staff cited the long reporting process and its interference with work as their reason for not reporting an incident. Physicians are particularly likely to leave a needle stick injury unreported, citing worries about loss of respect or a low risk perception. Low risk perception can be caused by poor knowledge about risk or an incorrect estimate of a particular patient's risk (Garus-Pakowska et al, 2017).

It is estimated in USA that the reported incidences of needle stick injury in nurses is currently 16.3% (Thomas & Murray, 2009). In United Kingdom, nearly 48% of the nurses have reported that they have been stuck by a needle or sharp used on a patient at some point in their careers. 49.4% of the needle stuck nurses reported it to higher officials as reported in a study by (Bukina & Dubovik, 1999). Even though reports from (Waljee et al., 2013), show unreported cases of NSIs, strides has however being made in the area of reporting NSIs as reported in studies by (Abdulmahdi, 2014) and (Bukina & Dubovik, 1999). Lori et al. also reported that over one-quarter (28.9%) of emergency nurses reported a sharp injury during a one-year period among emergency department nurses at a tertiary hospital here in Ghana.

The high incidence of sharp injuries indicates an urgent and pressing need for policy and educational interventions to address the infectious disease risk to this group of emergency department staff. (Thomas & Murray, 2009). The inability of health care workers to report needle stick injuries will leave patients at risk of getting infections when exposure-prone procedures are performed on them (Health, 2013).

2.12 Prevention of NSI

The high incidence and burden of needle stick injuries among health care workers has prompted the Centre for Disease Control to recommend universal precaution guidelines. The main themes of the guidelines were injury prevention by careful handling and proper disposal of the sharps. (MOH, 2015). Base on this precaution guidelines a study conducted on level of adherence to universal precautions by nurses at the 37 military

hospital, Accra also shows that 114 (95%) of nurses adhered to universal precautions while 6 (5%) did not adhere to the precautions.

According to the International Health Care Worker Safety Centre, University of Virginia (2012) (Total, & Teaching, 2018), facilities should have periodic reviewed and updated exposure control plan and should make available within fifteen days on request.

It was also mandated by the Centre for Disease Control that education and training of front line health care workers about the use of needle devices, injury prevention and infection control are very important. In addition, proper selection and use of engineered devices, enforcing sharp injury reporting and recording systems play crucial role in the prevention of NSIs (Centre for Disease Control, (CDC, 2012).

The Royal College of Nursing (2009) suggests that engineered control devices like needleless system, retractable syringes, scalpel blades and intravenous catheters are the widely recognized and effective preventive measures of needle stick injuries. The Royal College of Nursing goes on to suggest that, the traditional sharp devices should be replaced with engineered control devices whenever possible and that risk assessment must be carried out periodically and healthcare workers should be consulted while choosing safety devices. The International Health Care Worker Safety Centre, University of Virginia (2012)(Read et al., 2018), stated that there should be a periodic reviewed and updated exposure control plan however the Royal College of Nursing (2009) suggests that health care workers should be consulted when choosing safety devices.

As a preventive measure, study by (Health, 2013), stated that a multi-faceted strategy is necessary to prevent needle stick injuries. (Contributions, 2006), also proposed in their

study that proper use of needles, only using needles when necessary, training of people who use needles improved work practices and engineering controls.(Health, 2013), stated that engineering controls include safety needles, needle removers, retractable needles, needle shields/sheaths, needle-less IV kits, and blunt or calved ends on IV connectors. Work practices that reduce the risk of needle stick injuries include using instruments instead of fingers to grasp needles and load scalpels, and avoiding hand-to-hand exchange of sharp instruments (MOH, 2015).

2.13 Economic Burden of NSI

After a NSI occurs, there is substantial cost, which includes;

Testing for infection in the injured worker and, if known, the patient on whom the needle/sharp had been used. Post- exposure prophylaxis to prevent or manage potential blood- borne virus transmission, short- and long-term treatment of chronic blood-borne viral infections that are transmitted to injured workers staff absence and replacement, counselling for injured workers, and legal consequences (litigation and compensation claims).

Cost of a NSI varies widely and depends on what types of costs are included, as well as the risk/source of the needle stick. For example, the US CDC cites estimates of the direct costs associated with the initial follow- up and treatment of HCWs who sustain a NSI ranging from US\$71 to US\$5,000, depending on the treatment. Some studies report that only some NSIs actually generated costs (e.g., 72.1% of NSIs in Korea), because of underreporting or cases with low-risk known sources.(Cooke & Stephens, 2017) CDC (2008) also reported that one incidence of sharp or needle stick injury can have various

direct and indirect costs for health care facility. The facility need to go through cost to investigate the injury , costly laboratory testing, loss of employee time, cost of treatment for infected staff and cost for replacing staff for the period of being on treatment. The estimated direct cost of testing and follow up treatment of health care workers who had NSI are up to five thousand dollars. In addition to financial cost, the emotional cost of fear and anxiety on the affected workers and their families are beyond estimation. The social costs associated with sero- conversion of HIV and hepatitis are impossible to quantify (CDC, 2008) as cited by (Thapa, 2015).

Also, according to (Zhang et al, 2015), it is estimated that needle stick injuries that occur during insulin administration cost the NHS approximately £600,000 per year in the United Kingdom, including post-NSI prophylaxis, laboratory tests, counselling, treatment of transmitted diseases, and litigation (Thapa, 2015). The economic cost of managing NSIs is substantial, ranging from US\$51 to US\$3,766 (USD) for every case of NSIs in the United States (Mannocci et al., 2016). However, this amount did not account for the cost of treating the long-term complications of needle stick injuries, such as HIV, HBV, and HCV infections, each of which can cost hundreds of thousands of dollars. The economic loss due to NSIs is enormous, but emotional problems caused by NSIs are immeasurable (Xujun et al, 2015).

2.14 Psychological Burden

Beyond the financial costs of these injuries, many health care workers experience significant anxiety, depression and fear following needle stick injury. For example, a study of recently exposed nurses and physicians reveals that anxiety, depression,

insomnia, anorexia, and career regret are common, and persist long after the injury and clearance from the possibility of infection. Physicians and nurses frequently report feeling angry regarding their exposure, and resentment regarding the risks of working in healthcare for up to a year following the injury.

In addition to the psychological stress these injuries pose for the individual, they also cause significant stress among the family members of the injured individual. Individuals commonly report feeling shame and fear when disclosing the injury to their partners, and the possibility of exposure to their family members (Waljee et al., 2013).

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter explains methods used in carrying out the research. The chapter comprises the study area, research design, the study population of study, the sample size determination, sampling technique, data collection tools and procedure and data analysis.

3.2 Study methods and design

A cross sectional study design was used in this study. The study was conducted in the hospital by using a well-structured questionnaire. The hospital was selected taking into consideration the number of patients they attend to on daily bases and their admissions.

3.3 Data collection techniques and tools

The main technique for data collection was the use of questionnaire (Appendix 1). The questionnaire was self-structure with some features adapted from the Exposure Prevention Information Network (EPINet) (Object & Report, n.d.). Most of the questions was close ended and took not more than about 10 minutes to complete. It consisted of two sections including the demographic, quantitative and qualitative sections.

The questionnaire was designed in English language and for self-administration. This is because all the respondents have at least Middle School or Junior High School certificate.

3.4 Study population

The study population was defined as health care workers at risk of needle stick and other sharps injuries. This included physicians, dentists, nurses, midwives, laboratory technicians, orderlies, physician assistants, students on clinical attachment and cleaners. A total of 250 respondents was expected to take part in the research.

3.5 Study variables

A dependent variable (needle stick injuries or other sharps injuries) was used in the study. The dependent binary coded, that is, 0 and 1 representing “No” and “Yes” respectively.

The independent variables included sociodemographic characteristics of respondents and known risk/protective factors of needle stick. The independent variables were continuous, dichotomous and polychotomous variables. The sociodemographic characteristics included variables such as age, gender, work category, work experience, working hours and educational level.

Risk and protective factors included the demographic characteristics as well as other factors such as having ever had cut, bruises, abrasions, infection related to sharps injuries, blood splash and glove tear while handling sharps. Other descriptive variables such as factors contributing to needle stick and other sharps injuries (fatigue, pressure, non-co-operative/restless clients, unsafe medical sharps, overuse of medical sharps ,

recapping of used needles, unclear work procedures, lack of guidelines on handling healthcare sharps, poor housekeeping, and unsafe practices) were also explored.

3.6 Sampling

All health care workers who work at patient care areas in the Catholic hospital, Battor were selected to take part in the research. Others who do not work at patient care areas were not considered for the work. 250 respondents were those who work at patient care areas and took part in the research.

3.7 Pre-testing

Pre testing of study tool (questionnaire) was done in Adidome Government Hospital in the Central Tongu district of the Volta region, Ghana. This hospital is not part of the main research work but has the same characteristics as the main sample under study. From the pretesting, clarification of certain questions were made for easy understanding of questions. Important instructions in the questionnaires were bolded, repeated questions were deleted and responses that were not applicable to the setting of the population were deleted. Also the time for completing questionnaire was also determined.

3.8 Data Handling

Participants' identities were kept confidential throughout the study since the questionnaire did not demand name of respondents. Even though the questionnaires were numbered, it was not to identify respondents but to enable easy retrieval.

Furthermore to ensure data security and confidentiality, data entered into excel and Stata was password protected. Also, completed questionnaires were kept in a locker to prevent unauthorized access to the data and other confidential information.

3.9 Data Analysis

Completed questionnaires was entered into Microsoft excel 2013. Data was double entered to ensure clean data entry. Any differences observed after double entry of data were corrected by comparing with the original data set. The corrected data was further cleaned to obtain a master data set. The master data set was imported into STATA 14 for descriptive and quantitative analysis. However, Microsoft excel was used in the presentation of tabular results.

Descriptive analysis was done on prevalence measures, socio demographic distribution, among other variables in the form of percentages. A chi square analysis was used to assess the relationship between needle stick injuries and sociodemographic characteristics and risk factors. The chi square analysis was done at 95% confidence interval (CI) and p- values were obtained. A p-value less than 0.05 at a confidence interval of 95% was considered statistically significant.

Eight respondents among the health care workers who had needle stick injuries were interviewed using Voice recorders. All interviews were conducted in English language among 8 healthcare workers. Transcriptions were done and template analysis was used in the analysis of the qualitative data to develop themes for the analysis.

3.10 Ethical Consideration

Ethical approval for this work was sought from the Ensign College of Public Health Ethics Review Board. Approval from the IRB as well as heads of the two facilities were sought. Respondents were made to sign an informed assent form after it was read to them and a brief overview of the study. Those who agreed to participate then ticked a box indicating their acceptance to participate in the study and those who wished to withdraw from the study due to any reason whatsoever were allowed to withdraw from the study at will if they so desire at any point in time.

Also, no participant was given any form of compensation for participating. This was to prevent any bias response to the study.

3.11 Informed Assent

After all approvals were given as already described in the ethical consideration section, informed assent was sought from heads of the two hospitals. Written permission was sought before data collection started. Also, researchers ensured high level of anonymity. The data collection tool was devoid of any means of participants' identification such as names, index numbers, etc. in order to ensure anonymity. Also, administration of assent form (Appendix 2) preceded questionnaire administration. Participants were given a verbal overview of the study in order to understand the purpose of the study. This was followed by an informed assent form that respondent will be given to read and accept or reject to participate in the study. Respondents showed their acceptance to participate by signing the form at will.

3.12 Limitations of the study

One major limitation to the study was that even though one can fall in the categories of staff who took part in the study (nurses, midwives, doctors, orderlies, cleaners, theatre staff, physician assistants, nursing assistants/ward assistants, house officers, and laboratory technicians), once the person does not work in patients care areas, he/she cannot take part in the study. Those staff are in management positions. As a result of the 'shift work' of staff, the full complement of some categories of health care workers were not captured.

Also, the results may not reflect the diversity of the population under study.

There is also an issue with generalization of results across diverse populations. Due to the small sample size, generalization of results of this study may not represent diverse populations.

3.13 Assumptions of the study

It was assumed that all the respondents have at least BECE/MSLC for that matter could speak and write the English language. Hence questionnaire administration was by self-administration. Hence, respondents understood the questions and responded truthfully to their best of knowledge.

CHAPTER 4

RESULTS

4.1 Introduction

This chapter presents the findings of the study. The format of reporting are in written, tabular and graphical formats. Missing data less than 10% was not reported in the study. The main components of the results includes socio demographic characteristics of respondents. This gives the frequency and proportion of respondents on various sociodemographic characteristics.

Prevalence: This provides the prevalence of needle stick injuries among respondents in the study. It gives the frequency and percentage of needle stick injuries among the various categories of health care workers. It also provide the gender distribution of the same measure.

Contributory factors: This assesses the correlation between needle stick injuries and associated risk factors with demographic characteristics using chi square approach.

Psychological and economic burdens: A qualitative presentation of the psychological and how much health care workers spend as a result of needle stick injuries.

4.2 Socio demographic characteristics of respondents

As shown in table 4.1 below, a total sample of 203 respondents took part in the study as against the researcher's target of 250 which represents 81.2 % response rate. The mean age of the respondents was 31.2, with 19 years being the minimum and 59 years as the maximum.

In addition, female (68%) constituted the highest number of respondents. Nurses and midwives (70.79%) formed the largest percentage of health care workers who took part in the study. The rest were doctors/dentist/physician assistants (4.46%), laboratory technicians (3.47%) and ward assistants (21.29%).

Also, with regards to education, 25.74% were Middle/ Junior high/Senior high levers, graduates constituted 70.3% of the respondents and post graduates were 3.96%. Knowledge in infection prevention and control was also used and 92.54% were trained while 7.45% were not trained. The years of experience of the respondents were examined and were as follow; the mean year was 6 years, the minimum was 1 year and the maximum stood at 39 years of working experience.

Respondents work for a minimum of 1 hour a day, a maximum of 12 hours a day and the mean working hour was 7.7.

Table 4-1 Socio Demographic Characteristics of Respondents, N=203

Characteristics	Frequency	Parent	Mean	Min	Max
Age			31.2	19	59
Years of work experience			6	1	39
>10yrs	175	87.94			
11-20yrs	13	6.53			
<20yrs	11	5.53			
Hours of work daily			7.7	1	12
Gender:					
Male	65	32			
Female	138	68			
Education					
Middle/JHS/Sec	52	25.74			
Undergraduate	142	70.3			
Postgraduate	8	3.93			

Work Category	9	4.46			
Doctors/Dentist/PA	143	70.79			
Nurses & Midwives	7	3.47			
Laboratory Technicians	43	21.29			
Ward Assistants					
IPC					
Trained	186	92.54			
Not Trained	15	7.46			

4.3 Summary of Respondents Reported Injuries

Respondents were asked to identify numerous injuries they have had throughout their stay at the Battor Catholic hospital. A summary of the frequencies and proportions of different reported injuries is shown in table 4.2.

Table 4-2 Other Injuries and Reporting, N=203

Type of Injury	Frequency	Percentage
Cut		
No	101	50
Yes	101	50
Bruises		
No	180	88.67
Yes	23	11.33
Abrasions		
No	196	96.55
Yes	7	3.45
Other sharps injuries		
No	192	94.58
Yes	11	5.42
Blood splash		
No	95	46.8
Yes	108	53.2
Glove tear handling sharps		
No	127	62.56
Yes	76	37.44
Needlestick injuries		
Yes	69	34.16
No	133	65.84
Number of times of NSI		
0	133	65.52
1	48	23.65
2	13	6.4
3	6	2.96
4	2	0.99
5	1	0.49
Made Report After Injury		
Yes	60	42.55
No	81	57.45

We found that 101 (50%) and 11(5.43%) of respondents had cuts and injuries from other sharps (broken vials, ampoules, scalpel blade and louvre blades) respectively.

23(11.33%) had bruises, 7(3.45%) had abrasions. In addition, 108(53.2%) of health care workers in the Catholic hospital, Battor had blood splash on them over the period of the study. 76(37.44%) of the workers confirmed that their gloves got torn while working with sharps.

As reported earlier 69(34.16%) of them said they had needle stick injuries and out of these, 48 of them had it once, 13 had it twice, 6 had it thrice, 2 had it four times and 1 of them had it five times and of all these 60(42.55%) of them reported their injuries.

4.4 Prevalence and associated factors of needle stick injuries

The overall prevalence of needle stick injuries of the study was 34.16%, of which male constituted 31.88% and female 68.12%. Among the work categories of the health care workers, needle stick injuries were prominent among Nurses and Midwives 75.36%, followed by Ward Assistants who had 14.49%. Doctors/Dentist/Physician Assistants and Laboratory technicians constitute 7.25% and 2.9% respectively. The researcher wanted to find out needle stick injuries using the working experiences among the various age groups, and had the following results: below 10 years, (85.51%), 11-20 years (8.7%) and above 20 years (5.8%).

Infection prevention and control training workshop was done for 94.03% of the health care workers in the hospital from September 2016 to March 2017 and 92.54% were trained, so the researcher sort to find out its impact on needle stick injuries. From the result, needle stick injuries occurred among 94.03% of those who had the training and 5.97% among those who were not trained. 14.49% of the health care workers in the Catholic hospital, Battor said fatigue was the cause of needle stick injuries and 85.51%

did not believe it was due to fatigue. Pressure was also considered and 55.07% of the respondents believed it was the main cause of needle stick injuries in the hospital. 46.38% of respondents believed non-cooperative/restless patients are the cause of needle stick injuries. Unsafe medical sharps, over use of needles, recapping and poor housekeeping had 14.49%, 5.8%, 43.48% and 5.8% respectively.

A chi square analysis at a 95% confidence interval shows work place pressure to be statistically significant.

Table 4-3 Prevalence of Needle Stick Injuries and Associated Demographic and Other Variables, N=203

Variable	Yes		No		P-Value
	N	%	N	%	
Overall	69	34.16	133	65.84	
Gender					0.965
Male	22	31.88	42	31.58	
Female	47	68.12	91	68.42	
work category					0.208
Doctors/Dentist/PA	5	7.25	4	3.03	
Nurses & Midwives	52	75.36	90	68.18	
Laboratory Technicians	2	2.9	5	3.79	
Ward Assistants	10	14.49	33	25	
Work Experience					0.657
below 10 years	59	85.51	115	89.15	
11-20 years	6	8.7	7	5.43	
above 20years	4	5.8	7	5.43	

Table 4.3 Prevalence of Needle Stick Injuries and Associated Demographic and other Variables, N=203 continue

Infection Prevention and Control					0.777
Trained	63	94.03	122	91.73	
Not trained	4	5.97	11	8.27	
Fatigue					0.052
Yes	10	14.49	36	27.07	
No	59	85.51	156	77.23	
Workplace Pressure					0.00
Yes	38	55.07	107	80.45	
No	30	43.48	26	19.55	
Non-cooperative/Restless Patient					0.459
Yes	32	46.38	102	50.5	
No	37	53.62	100	49.5	
Unsafe Medical Sharps					0.508
Yes	10	14.49	15	11.28	
No	59	85.51	118	88.72	
Over use of needles					0.738
Yes	4	5.8	6	4.51	

No	65	94.2	127	95.49	
Recapping of needle					0.45
Yes	30	43.48	50	37.59	
No	39	56.52	122	60.4	
Poor house keeping					0.429
Yes	4	5.8	13	9.77	
No	56	94.2	120	90.23	

4.5 Economic Burden of Respondents after Needle stick injuries

4.5.1 High and Low economic burdens

Respondents expressed different views about the cost of management of post exposure prophylaxis. One respondents said taking care of themselves after the incident was not expensive. A 36 year old midwife with 16 years of working experience said *“It did not cost me so much even though I was craving for more milo beverages”*.

However, several interviewees expressed high cost when taking the prophylaxis. Some were able to estimate the cost incurred during the treatment. Most of these high cost of living was spent on food.

“It cost me a lot because I have to eat much. I sometimes wake up at dawn to eat. I used to eat twice a day but now I have to eat three or four times a day. I spent over GHC500.00 during the period of taking the drugs” (Nurse, 25 years, and 3 years working experience)

“I spent over GHC 600.00 on food items. This is because I couldn’t prepare food for myself” said a female nurse, 25 years old with 5 years working experience.

A male orderlies, 40 years old with 4 years’ work experience also said *“I spent over GHC 1000.00 due to the additional food items”*

“I cannot tell the exact cost but it did cost me” was the response from a female Nurse aged 26 with 5 years working experience even though she couldn’t estimate the cost.

4.6 Psychological Burden of Respondents after Needle stick injuries

4.6.1 Mixed Psychological feelings

Respondents expressed varied forms of feelings whiles on the post exposure prophylaxis. Some of them expressed fear during the period.

“I taught I will be infected with the HIV and cried the whole day thinking my “world” was over because the patient was HIV positive. Because of the way I was frightened, next time I will quite the job anytime I get another prick” was what a female nurse, aged 25 with 5 years working experience expressed ”.

“I was afraid initially but have to accept it. The drug made me sexually weak”, was what the 40 year old orderlies said.

Besides, some of the respondents also experienced anxiety as expressed by a 36 years old midwife.

“I was not comfortable most especially in the first instance. Because I did not know the status of the patient. Even though the person was later negative, I was still not happy within myself. This was because the condition has a window period”.

“I was traumatized and threw my gloves away without continuing serving the medications to the rest of the patients” (Nurse 26 years old with 5 years working experience)

CHAPTER 5

DISCUSSION

5.1 Introduction

This chapter presents the discussions of the major findings earlier outlined in chapter four. The discussions are based on findings of the study compared with already existing studies and theories. Probable reasons for similarities and differences compared to other literature. The discussion of these findings, their limitations and implications on needle stick injuries form the basis of this chapter.

5.2 Prevalence of needle stick injuries

The overall prevalence of needle stick injuries in the Catholic Hospital, Battor was 34.16% between January 2016 to December 2018 which is high considering its health implications but is less than that of (Mcnamara et al, 2008) in their study conducted for Nurses' views on workplace safety and needle stick injuries, nearly 64% of US nurses said needle stick injuries are major problem they face. Another study by (Mcguire-wolfe, 2013) reported that in CDC 2010 report, HBV infection due to needle stick injuries accounted for (n=54) 4.2%. This also shows how serious NSI is. Studies from other parts of the world (Balouchi et al, 2015) 41% , (Vaz, 2009) 34.8% (Chalya et al., 2015) 48.6%, (Shiva et al, 2011) 49.3% (Bukina & Dubovik, 1999) 71.9% showed a higher prevalence of needle stick injuries among health care workers.

5.3 Risk factors of needle stick injuries

The study looked at the risk factors that contribute to needle stick injuries and compared with what other researchers also found out with their studies.(Wilburn & Eijkemans, 2003, Bukina & Dubovik, 1999, Hambridge, 2011, Project, 2005) identified recapping of needles, passing device from one person to another, transferring body fluids into containers, failing to properly dispose of used needles ,collision between workers, hidden needles in bed sheets or linens, during waste collection and disposal, withdrawing needle from rubber and protruding needle from sharp box as causes of needle stick injuries. The study in the Catholic hospital, Battor had the same findings but the only statistically significant variable is work place pressure, contrary to the views of the authors above.

5.4 Work place Pressure

The study identified work place pressure as being statistically significant when respondents were asked to identify contributory factors to needle stick injuries in the facility. Contrary to studies done by (Hoffmann et al, 2013, Elmiyeh et al., 2004, Lakbala et al., 2014, Chalya et al., 2015, Abdulmahdi, 2014) which identified work place pressure as having association with needle stick injuries, their findings were not statistically significant. (Lakbala et al., 2014, Abdulmahdi, 2014) had their studies done in the operating theatre and accident and emergency center where one will have thought there will be more pressure, work place pressure did not stand as the only significant variable as compared to this study. The difference in the studies could be that Catholic hospital, Battor is a referral center for about five districts because of its location, and so

has a higher number of patients that visit the facility, thereby putting more pressure on the HCWs.

5.5 Reporting

The study also identified under reporting of needle stick injuries as a major problem of health care workers in the Catholic hospital, Battor as shown by (Elmiyeh et al., 2004, McGuire-wolfe, 2013, Cooke & Stephens, 2017) in their publications. The study sort to find out why the under reporting and had the following as responses from the respondents: fear of punitive response by employer/in-charge, use of self-care, time constraint, believe they are at low risk of infection, just a little prick, lack of knowledge of appropriate procedure after injury. The study identified a big differences in the figures from the incidence book and those with the ART clinic. The incidence book recorded 29 cases from January 2014 to December 2018. Out of which 3 occurred in 2014, 4 in 2015.

22 of the needle stick injuries occurred between the periods of the study (2016-2018). However, the record with the clinic was 10 cases (7 cases in 2017 and 3 cases in 2018) while 69 cases were identified from respondents of the study.

5.6 Economic Burden of needle stick injuries

Health care workers suffer economic burden as a result of NSIs. The study identified that respondents spent between GH¢ 500.00 to GH¢1000.00 on food during the time of taking their medications. In Ghana the health care worker does not pay for the post exposure prophylaxis. The HCW pays for other treatment he/she might get from the

exposure. (Mannocci et al., 2016, Cooke & Stephens, 2017, Hessels & Larson, 2017, Lee et al, 2004) are some of the studies that looked at the cost components of NSIs, and it ranges between \$ 1,049 to \$ 3,766 annual attributable cost.

5.7 Psychological Burden of needle stick injuries

The study found fear, anxiety disorders, adjustment disorders and post-traumatic stress disorder as the main psychological burden of HCWs who had needle stick injuries in the Catholic hospital, Battor. These are associated with the uncertainty with the laboratory results after the post exposure prophylaxis and the side effects of the medications. Some have the fear that they will get infections even though they had treatment. Others fear telling their relatives and spouse because of separation. (Mm & Yu, 2013, Cooke & Stephens, 2017, Sohn et al, 2006, and Connor, 2011) also identified similar psychological burden associated with needle stick injuries in their study.

CHAPTER 6

CONCLUSION AND RECOMMENDATION

6.1 Introduction

This chapter summarizes and presents detail conclusions derived from the research as well as recommendations for implementation.

6.2 Conclusion

This study sought to assess the prevalence of needle stick injuries among health care workers in the Catholic Hospital, Battor in the North Tongu district of Volta region, Ghana and how they cope with such injuries economically and psychologically.

Prevalence rate of needle stick injuries in health care workers in the Catholic hospital, Battor among respondents was 34.16 per 100 workers who work at patient care areas. Even though this figure was found to be lower compared to studies done in sub-Saharan Africa and other countries, lots of sensitization should be done to the health care workers because of the hazards that such injuries pose to the health care workers and the hospital management. This is because the affected staff will have to be given excuse duty for four weeks and the physical, psychological and financial challenges that the staff will go through cannot be quantified.

Non modifiable risk factors such as age and gender were identified to have played no role in needle stick injuries but rather work place pressure. Most of the needle stick cases in the hospital were not reported. This can pre dispose patients to getting infections from the health care workers who might be harbouring infections as a result of

NSI. On the average, health care workers who had needle stick injuries spent about GHC 700.00 during the period of taking the post exposure prophylaxis.

Finally, health care workers who had NSI suffer psychological burdens mainly anxiety and fear.

6.3 Recommendations

The researcher, based on the findings of this study make the following recommendations.

- Governments, policy makers and ministry of health may consider drawing a national policy on needle stick injuries for data collection so as to help in future planning. This policy should make it mandatory for every health care worker who gets such an injury to report for appropriate actions.
- The ministry of health should post more health care workers to the various facilities to reduce the pressure on staff.
- More also, the ministry of health should make it mandatory for every health facility to have at least an annual training on injection safety for every staff, most especially those working at patient care areas.
- Management of health facilities should pay more attention to the economic and psychological burdens of HCWs who had needle stick injuries.
- Managers of our facilities should sensitize HCWs on needle stick injury protocols that are available in their work places.
- Finally, there should be proper record keeping by our health care facilities to enable the ministry to monitor the health progress of affected staff.

REFERENCES

- Abdulmahdi, L. (2014). Implementation of Online Reporting form for Needle Stick Injury in the Accident and Emergency.
- Afridi, A. A. K., Kumar, A., & Sayani, R. (2013). Needle Stick Injuries – Risk and Preventive Factors: A Study among Health Care Workers in Tertiary Care Hospitals in Pakistan. *Global Journal of Health Science*, 5(4). <https://doi.org/10.5539/gjhs.v5n4p85>
- Balouchi, A., Shahdadi, H., Ahmadidarrehsima, S., & Rafiemanesh, H. (2015). The frequency, causes and prevention of needlestick injuries in nurses of Kerman: A cross-sectional study. *Journal of Clinical and Diagnostic Research*, 9(12), DC13–DC15. <https://doi.org/10.7860/JCDR/2015/16729.6965>
- Beyera, G. K., & Beyen, T. K. (2014). Epidemiology of exposure to HIV/AIDS risky conditions in healthcare settings: The case of health facilities in Gondar City, North West Ethiopia. *BMC Public Health*, 14(1), 1–8. <https://doi.org/10.1186/1471-2458-14-1283>
- Bukina, E. N., & Dubovik, V. M. (1999). The gauge freedoms of enlarged Helmholtz theorem and Debye potentials; their use in the multipole expansion of conserved current. *Turkish Journal of Physics*, 23(5), 927–935.
- Chalya, P. L., Seni, J., Mushi, M. F., Mirambo, M. M., Jaka, H., Rambau, P. F., ... Kalluvya, S. E. (2015). Needle-stick injuries and splash exposures among health-care workers at a tertiary care hospital in north-western Tanzania. *Tanzania Journal of Health Research*, 17(2), 1–15. <https://doi.org/10.4314/thrb.v17i2.3>

- Connor, M. B. O. (2011). The psychological impact of needlestick injuries, 52, 11845. <https://doi.org/10.1007/s11845-011-0708-2>
- Contributions, O. (2006). Indian Journal of Medical Sciences. *Indian Journal of Medical Sciences*, 60(6), 228–230.
- Cooke, C. E., & Stephens, J. M. (2017). Clinical, economic, and humanistic burden of needlestick injuries in healthcare workers. *Medical Devices: Evidence and Research*, 10, 225–235. <https://doi.org/10.2147/MDER.S140846>
- Elmiyeh, B., Whitaker, I. S., James, M. J., Chahal, C. A. A., Galea, A., & Alshafi, K. (2004). Needle-stick injuries in the National Health Service: A culture of silence. *Journal of the Royal Society of Medicine*. <https://doi.org/10.1258/jrsm.97.7.326>
- Garus-Pakowska, A., Szatko, F., & Ulrichs, M. (2017). Work-related accidents and sharp injuries in paramedics—illustrated with an example of a multi-specialist hospital, located in central Poland. *International Journal of Environmental Research and Public Health*, 14(8). <https://doi.org/10.3390/ijerph14080901>
- Geller, E. S., Berry, T. D., Ludwig, T. D., Evans, R. E., Gilmore, M. R., & Clarke, S. W. (1990). A Conceptual Framework for Developing And Evaluating Behavior Change Interventions For Injury Control, 5, 125–137. <https://doi.org/10.1093/her/5.2.125>
- Gholami, A., Salarilak, S. H., Alinia, T., & Nejad Rahim, R. (2010). Study of needle stick injuries among health care workers at teaching hospitals in Urmia. *Iranian Journal of Epidemiology*, 6(3), 57–61. <https://doi.org/10.4103/0019-557X.70540>

- Gupta, D. K., Agrawal, V. K., Gupta, S. B., & Ahmad, F. (2015). Needle Stick Injuries Among Health Care Worker. *People's Journal of Scientific Research*, 8(2), 17–22. Retrieved from <http://pjsr.org/PDF/4.pdf>
- Hambridge, K. (2011). Needlestick and sharps injuries in.
- Health, T. (2013). Sharps safety.
- Hessels, A., & Larson, E. (2017). precaution adherence : a systematic review of the literature, 92(4), 349–362. <https://doi.org/10.1016/j.jhin.2015.08.023>.The
- Himmelreich, H., Rabenau, H. F., Rindermann, M., Stephan, C., Bickel, M., Marzi, I., & Wicker, S. (2013). Management von Nadelstichverletzungen. *Deutsches Arzteblatt International*, 110(5), 61–67. <https://doi.org/10.3238/arztebl.2013.0061>
- Hoffmann, C., Buchholz, L., & Schnitzler, P. (2013). Reduction of needlestick injuries in healthcare personnel at a university hospital using safety devices. *Journal of Occupational Medicine and Toxicology*, 8(1), 1. <https://doi.org/10.1186/1745-6673-8-20>
- Kommogldomo, E. D. (2016). *Needle stick and sharps injuries among health care workers at the 37 Military hospital*. Retrieved from <http://ugspace.ug.edu.gh>
- Kosgeroglu, N., Ayranci, U., Vardareli, E., & Dincer, S. (2004). Occupational exposure to hepatitis infection among Turkish nurses: Frequency of needle exposure, sharps injuries and vaccination. *Epidemiology and Infection*, 132(1), 27–33. <https://doi.org/10.1017/S0950268803001407>
- Lakbala, P., Sobhani, G., Lakbala, M., Inaloo, K. D., & Mahmoodi, H. (2014). Sharps injuries in the operating room. *Environmental Health and Preventive Medicine*,

19(5), 348–353. <https://doi.org/10.1007/s12199-014-0401-y>

Lee, J., Botteman, M., & Nicklasson, L. (2004). A Systematic Review of the Economic and Humanistic Burden of Needlestick Injury in the United States Preparations for the Safe Management of Severe Acute Respiratory Syndrome (SARS) Research Protocol Patients A Michelin, (May), 2004.

Ling, M. L., Apisarnthanarak, A., & Madriaga, G. (2015). The burden of healthcare-associated infections in southeast Asia: A systematic literature review and meta-analysis. *Clinical Infectious Diseases*. <https://doi.org/10.1093/cid/civ095>

Mannocci, A., De Carli, G., Di Bari, V., Saulle, R., Unim, B., Nicolotti, N., ... La Torre, G. (2016). How Much do Needlestick Injuries Cost? A Systematic Review of the Economic Evaluations of Needlestick and Sharps Injuries among Healthcare Personnel. *Infection Control and Hospital Epidemiology*, 37(6), 635–646. <https://doi.org/10.1017/ice.2016.48>

Mcguire-wolfe, C. M. (2013). Practices and Factors Influencing Sharps Use and Safety in a Suburban Fire Department and Among Emergency Medical Services Personnel by, (January).

Mcnamara, M., Patterson, D., & Communications, W. (2008). Workplace Safety and Needlestick Injuries are Top Concern for Nurses.

Mm, M. Z., & Yu, Y. (2013). A study of the psychological impact of sharps injuries on health care workers in China. *American Journal of Infection Control*, 41(2), 186–187. <https://doi.org/10.1016/j.ajic.2012.02.023>

MOH. (2015). *National Policy and Guidelines for Infection Prevention and Control in*

Health Care Settings.

- Mustafa, S. S. A. (2012). Managing the Risk of Needlestick Injury in U.A.E. Hospitals.
- Nsubuga, F. M., & Jaakkola, M. S. (2005). Needle stick injuries among nurses in sub Saharan Africa. *Tropical Medicine & International Health*, 10(8), 773–781.
<https://doi.org/10.1111/j.1365-3156.2005.01453.x>
- Object, S., & Report, I. (n.d.). Needlestick & Sharp Object Injury Report, 14–16.
- Phillips, E. K., & Jagger, J. (2008). Bloodborne Pathogen Exposure Risk Among Surgeons in Sub - Saharan Africa • Bloodborne Pathogen Exposure Risk Among Surgeons in Sub-Saharan Africa, (May 2014). <https://doi.org/10.1086/522681>
- Project, W. (2005). Needle stick injury prevention assessment tool.
- Prüss-Üstün, A., Rapiti, E., & Hutin, Y. (2005). Estimation of the global burden of disease attributable to contaminated sharps injuries among health-care workers. *American Journal of Industrial Medicine*, 48(6), 482–490.
<https://doi.org/10.1002/ajim.20230>
- Prüss-üstün, A., Rapiti, E., Hutin, Y., Campbell-lendrum, D., Corvalán, C., & Woodward, A. (2003). Sharps injuries Global burden of disease from sharps injuries to health-care workers. *Environmental Burden of Disease Series*, (3), 1–48.
Retrieved from http://cdrwww.who.int/quantifying_ehimpacts/publications/en/sharps.pdf%5Cnhttp://www.who.int/quantifying_ehimpacts/publications/9241562463/en/
- Qazi, A. R., Siddiqui, F. A., Faridi, S., Nadeem, U., Umer, N. I., Mohsini, Z. S., ... Khan, M. (2016). Comparison of awareness about precautions for needle stick

- injuries: A survey among health care workers at a tertiary care center in Pakistan. *Patient Safety in Surgery*, 10(1), 1–6. <https://doi.org/10.1186/s13037-016-0108-7>
- Read, T. R., Type, A. L. L., Total, A. L. L., & Teaching, A. L. L. (2018). EPINet Report for Blood and Body Fluid Exposures EPINet Report for Blood and Body Fluid Exposures, 4–8.
- Shiva, F., Sanaei, A., Shamshiri, A. R., & Ghotbi, F. (2011). Survey of needle-stick injuries in paediatric health personnel of 5 University Hospitals in Tehran. *Journal of the Pakistan Medical Association*, 61(2), 127–131.
- Sohn, J. W., Kim, B. G., Kim, S. H., & Han, C. (2006). Mental health of healthcare workers who experience needlestick and sharps injuries. *Journal of Occupational Health*, 48(6), 474–479. <https://doi.org/10.1539/joh.48.474>
- Sossai, D., Di Guardo, M., Foscoli, R., Pezzi, R., Polimeni, A., Ruzza, L., ... Venturini, P. (2016). Efficacy of safety catheter devices in the prevention of occupational needlestick injuries: Applied research in the Liguria Region (Italy). *Journal of Preventive Medicine and Hygiene*, 57(2), E110–E114.
- Thapa, P. K. (2015). Strategies for reducing needlestick injuries among health care workers A literature review.
- Thomas, W. J. C., & Murray, J. R. D. (2009). The incidence and reporting rates of needle-stick injury amongst UK surgeons, 12–17. <https://doi.org/10.1308/003588409X359213>
- Vaz, F. S. (2009). *Indian Journal of Public Health*, (November). <https://doi.org/10.4103/0019-557X.70540>

- Waljee, J. F., Malay, S., & Chung, K. C. (2013). Sharps injuries: The risks and relevance to plastic surgeons. *Plastic and Reconstructive Surgery*, *131*(4), 784–791. <https://doi.org/10.1097/PRS.0b013e3182818bae>
- Wilburn, S. Q., & Eijkemans, G. (2003). preventing Needle stick Inj=6, 451–456. <https://doi.org/10.1179/oeh.2004.10.4.451>
- Xujun, Z., Yue, G., Mengjing, C., Lorann, S., & Huiyun, X. (2015). Needlestick and sharps injuries among nurses at a teaching hospital in China. *Workplace Health and Safety*, *63*(5), 219–225. <https://doi.org/10.1177/2165079915580035>
- Zhang, X., Gu, Y., Cui, M., & Stallones, L. (2015). Needlestick and Sharps Injuries Among Nurses at a Teaching Hospital in China, *63*(5), 219–225. <https://doi.org/10.1177/2165079915580035>

APPENDICES

Appendix 1: Research questionnaire

Questionnaire on Assessment of the prevalence of needlestick injuries among health care workers in the Catholic Hospital, Battor in the North Tongu District of Volta Region, Ghana.

Introduction

The researcher is a final year student of Ensign College of Public Health, Kpong.

Please you have been selected to voluntarily participate in this research study. We assure you that every information you will provide will remain anonymous and your data will be treated confidential and that no harm will come to you for participating in this study. We will do voice recordings for respondents who had needlestick injuries when the need arise. These recordings will be kept confidential and will be for the assessment of the review board only. Your participation will add to knowledge and informed decision making. You may withdraw from the exercise if you are not comfortable.

I agree to take part in the study

I disagree to take part in the study

Instruction: Having agreed to take part in this study, please tick (✓) a box to select an answer that best applies to you or write your answer in the space provided where applicable. You may tick as many answers that are applicable.

Demographic characteristics

1. Gender Male Female
2. Please indicate your age: _____
3. What is your highest education level?

Middle School/ JHS Secondary Diploma Degree Masters
 Medical Doctor Doctorate Certificate others (specify).....
4. Which category of healthcare workers do you belong to?

Doctor/Physician/Dentist/ Physician Assistant Professional
Nurse/Midwife/Community Health nurse/enrolled nurse Laboratory staff
Nursing Assistant/Ward Assistant House officer Public health
officer/technician Orderlies Rotation Nurse other (specify).....
5. Were you trained in infection prevention control during your professional training?

Yes No
6. Are you professionally trained in the type of work that you perform in your
ward/unit/department? Yes No
7. How long have you worked in the above job category at the hospital? _____
8. How long do you work (on a daily basis) at the hospital? _____

Prevalence of needlestick injuries

9. Are you given clear work procedures/guidelines in your job? Yes No
10. What types of sharps do you handle in the course of your job? (Select all that apply)

Needle [] Blade [] Scalpel [] Slide [] Broken Glass (e.g. vials/Ampoules)
[] Broken Thermometer [] Any other (specify).....

11. Do you use syringes with auto-retractable needles? Yes [] No []
12. Which of the following incidents/injuries have you experienced in the course of your work? (**Select all that apply**) Cut [] Bruises [] Abrasion [] Infection related to sharps injury (specify) [] Blood splash [] Glove tear while handling sharps [] Any other (specify).....
13. For needlestick injuries, how many times have you had needlestick injuries? In which year?
14. How would you classify the injury mentioned in question 13 above? Superficial/Mild (no bleeding) [] Moderate (skin punctured, some bleeding) [] Severe (profuse bleeding) [] Fatal (led to disability) []

Contributory factors

15. What would you consider as the contributing factor(s) to needlestick and other sharps injuries? Fatigue [] Pressure [] Non-co-operative/restless clients [] Giving IV medications [] Unsafe medical sharps [] Overuse of medical sharps [] recapping of used needles [] Unclear work procedures [] Lack of guidelines on handling healthcare sharps [] Poor housekeeping [] Unsafe practices [] Any other (specify)....
16. During what procedure or activity did the injury mentioned in question 13 above occurred? (**Select all that apply**) Recapping [] Disposing of the needle []

Drawing sample from a patient/client [] Suturing [] Passing the device or receiving from someone else [] Waste disposal [] Cannulation [] Cleaning patient care areas [] Collision with another worker [] Collection from basin/receptacle [] Cutting [] Disassembly/ detaching [] Inflicted by other person using the device [] Sharps in unexpected areas e.g. locker, linen/bed sheet etc. Breaking ampoules/vials []. Any other (specify).....

17. Do your department have any needlestick protocol?

Yes [] No [] Not aware of any []

18. If yes, where is it located? On the notice board [] with the ward in-charge [].

In the desk [] In the shelf [] Others, please specify.....

Preventive measures

19. Did you report the injury that occurred to anybody? Yes [] No []

20. If the answer to question 19 above is No, then why did you not report the incident/accident? Fear of punitive response by employer/in-charge [] Use of self-care [] Time constraint [] Belief I am at low risk of infection [] just a little prick [] Lack of knowledge of appropriate procedure after injury []

21. If the answer to question 19 above is Yes, whom did you report the injury to?

The ward in-charge [] The next senior person in the ward [] Public health division [] The doctor on duty [] Others, please specify.....

22. Are there laws and policies regarding needlestick stick injuries and safety-engineered devices in Ghana? Yes [] No [] Not aware of any []
23. Are there standard guidelines for handling used disposable healthcare sharps in your ward/department? Yes [] No [] Not aware of any []
24. Where do you dispose used healthcare sharps after use? Safety boxes [] Plastic bags [] Left on the floor [] Waste bins [] Left on the operating table [] Mixed with other wastes [] Infusion boxes [] Others (specify).....
25. What personal protective equipment does the hospital provide for your use? (Select all that apply) Masks [] Gloves [] Aprons [] Overalls [] Lab coats [] boots [] goggles [] Others (specify).....
26. Are the personal protective equipment provided adequate for use at all the time? Yes [] No [] (explain briefly)
27. How often do you use the personal protective equipment/ material listed in question 25 above? Always [] occasionally [] rarely [] Not at all []
28. Have you been vaccinated against Hepatitis B? Yes [] No []
29. If the answer to question 28 above is No, then why have you not been vaccinated? It is not provided for by the hospital [] I am not aware of the requirement for vaccination [] I am too busy to get time for vaccination [] It cannot protect me from Hepatitis B [] I fear injections [] Fear of side effects of the vaccination [] Any other reason (state).....

30. Have you ever contracted any infection(s) in the course of working in the hospital?

Yes [] No []

31. Which one of the following infection did you contract in the course of your work/job at the hospital? Hepatitis B [] Hepatitis C [] HIV/AIDS [] Any other (specify)

32. What steps did you take to handle the infection(s) in question 31 above?

33. Were you put on post exposure prophylaxis? If yes for how long.

34. What measures has the hospital management put in place to control occupational related infections caused by HBV, HCV and HIV? (Select all that apply)
Eliminating unnecessary sharps [] Vaccination [] Providing post-exposure testing [] Providing post-exposure prophylaxis [] Providing safe medical devices [] Providing PPEs such as gloves and boots [] Conducting in-service training on occupational safety, infection prevention and control [] Developing and availing guidelines on precautions [] Proper management of medical sharps [] Establishing an occupational safety and health committee [] Establishing a needle stick committee [] Any other (specify).....

Please if you had needlestick injuries before, kindly see the research team to continue the questions below.

Can you tell me about how it happened?

What next about the prophylaxis?

How did you feel after the needlestick injury? Tell us more, please.

Did you talk to your family or partner? How did they take it?

Did your experience above resulted in conditions you will want to share with us?

Did the injury resulted in you having financial expenses you will want to share with us?

What advice will you give those who had needlestick injuries?

What do you suggest health care workers should do to minimise needlestick injuries?

Thanks for taking part

Appendix 2: INFORMED ASSENT FORM

6.3.1 Introduction and Informed Assent Form

Dear respondent,

My name is Sylvester Kwaku Akpaglo, a graduate student of Ensign College of Public Health. As a public health student, my area of research interest is infection prevention and control. I am interested in finding out the prevalence of needle stick injuries among health care workers in the Catholic hospital, Battor in the North Tongu District of Volta region, Ghana. The information you provide in this questionnaire is strictly confidential. The final report aggregates all answers and cannot therefore be attributed to you individually or by name. You are further assured that no personal harm or disadvantage will apply to you as a result of your participation in this study. Moreover, you can choose not to continue with, or answer any particular question if you feel strongly about it. Your participation will however, contribute to knowledge generation about needle stick injuries. Do I have your consent to administer the questionnaire to you now?

YES [] NO []

Date.....

Signature.....

Appendix 3: OUTCOME OF IRB REVIEW OF YOUR THESIS PROPOSAL

OUR REF: ENSIGN/IRB/M4
YOUR REF:
Tel: +233 245762229
Email: irb@ensign.edu.gh
Website: www.ensign.edu.gh



P. O. Box AK 136
Akosombo
Ghana

Tuesday, 13 November 2018

INSTITUTIONAL REVIEW BOARD SECRETARIAT

Sylvester Kwaku Akpaglo
Ensign College of Public Health

Dear Mr. Akpaglo,

OUTCOME OF IRB REVIEW OF YOUR THESIS PROPOSAL

At a meeting of the INSTITUTIONAL REVIEW BOARD (IRB) of Ensign College of Public Health held on 1st November, 2018 your proposal entitled “**Assessing the Challenges Associated with Needlestick Injuries Among Health Professionals in the Catholic Hospital, Battor from January 2016 to December 2018**” was considered.

Your proposal has been approved for data collection in the following settings:

1. Provide consent forms.
2. Include the district and region in your topic.
3. Clearly state the methodology used for the study.

We wish you all the best.

Sincerely,



Dr (Mrs) Acquaaah-Arhin
(Chairperson)

Cc. President, ECOPH
Cc: Academic Registrar, ECOPH
Cc: Head of Academic Program, ECOPH

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