OCCUPATIONAL EXPOSURE TO HIV AND HOW HEALTH WORKERS COPE
WITH IT AT THE KORLE BU TEACHING HOSPITAL

BY

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MPHIL NURSING DEGREE

JULY, 2018
DECLARATION

I, Theophilus Baidoo, hereby declare that the work presented in this thesis is the result of my own study, and for the exception of other people’s research works, which has duly been recognised at the in-text citations and reference section, this thesis has never been presented to the University of Ghana or any other university for any degree.

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Signature

Date

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(SUPERVISOR)

Signature

Date

DR. GLADYS DZANSI

(SUPERVISOR)

Signature

Date
DEDICATION

This study is dedicated to my supportive family, who urged me on when things got very difficult and stood by me throughout to achieve this Herculean task. I specifically dedicate this study to my wife, Ms. Harriet Afful Eduaquah, who consistently prayed, encouraged me and gave everything to support the project from beginning of the study till it ended. I also dedicate this study to my mother, father, siblings, and brother-in-law who supported me unconditionally to ensure that I succeed in this research project.

The study is also dedicated to all the brave diligent health workers in the Korle Bu Teaching Hospital and Ghana as a whole. The dedication also goes for all health workers who have ever been exposed occupationally to HIV, especially the participants of this study.

This thesis is also dedicated to the faculty of the University of Ghana School of Nursing and Midwifery, especially the lecturers and students.
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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AIDS</td>
<td>Acquired immune deficiency syndrome</td>
</tr>
<tr>
<td>CINAHL</td>
<td>Cumulative Index to Nursing and Allied Health Literature</td>
</tr>
<tr>
<td>EP</td>
<td>Evangelical Presbyterian</td>
</tr>
<tr>
<td>GH¢</td>
<td>Ghana Cedis</td>
</tr>
<tr>
<td>HBV</td>
<td>Hepatitis B Virus</td>
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<tr>
<td>HCV</td>
<td>Hepatitis C Virus</td>
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<tr>
<td>HIV</td>
<td>Human immunodeficiency virus</td>
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<tr>
<td>ID</td>
<td>Identification</td>
</tr>
<tr>
<td>KBTH</td>
<td>Korle Bu Teaching Hospital</td>
</tr>
<tr>
<td>LEKMA</td>
<td>Ledzokuku-Krowor Municipal Assembly</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MPhil</td>
<td>Master of Philosophy</td>
</tr>
<tr>
<td>NO.</td>
<td>Number</td>
</tr>
<tr>
<td>PEP</td>
<td>Post-exposure prophylaxis</td>
</tr>
<tr>
<td>PTAD</td>
<td>Post-Traumatic Anxiety Disorder</td>
</tr>
<tr>
<td>STI</td>
<td>Sexually Transmitted Infection</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>USA</td>
<td>United States of America</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organisation</td>
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</table>
ABSTRACT

Occupational exposure to HIV by health workers is a major issue globally. It is more prevalent in the low-income countries especially, in the Sub-Saharan Africa and Asia. Yet it seems that there is very little information on occupational exposure to HIV by health workers and how they cope in Ghana. The study explored the occupational exposure to HIV and how health workers cope with it. The exploratory descriptive qualitative research design was used to explore and describe the occupational exposure to HIV and coping strategies of health workers. Purposive and snowball sampling techniques were used to recruit study participants. A sample size of 12 participants was used for the study. Face-to-face interviews were conducted using a semi-structured interview guide. Data were analysed using the Miles and Huberman’s approach to content analysis. The key findings of the study were that all the health workers occupationally exposed to HIV experienced fear and anxiety. The main causes of occupational HIV exposure were improper disposal of sharps, recapping of used needles and lack of protective clothing. Health workers exposed to HIV experience stress as a result of the fear of being infected with HIV and the side effects of post-exposure prophylaxis. The challenges faced by health workers occupationally exposed to HIV consist of care lapses, side effects of post-exposure prophylaxis (PEP) and lack of support at the workplace after the exposure. These challenges led to under-reporting and non-adherence to the PEP. The effects of the HIV occupational exposure on the health workers consisted of the side effects of the PEP, anxiety, empathy for people living with HIV, increased sense of caution and deterioration in interpersonal relationships with patients, friends, and co-workers. The coping strategies used by the health workers included caring for the site of exposure, reporting HIV exposure, testing for HIV status of the source, adhering to the PEP, anger, guilt, crying, praying, blaming, and denial. The study revealed that health workers coped well with social support from family, friends, and co-workers. Some health workers felt that their health facilities could have done more to support them. It is recommended that standard precaution is enforced. It should be ensured that health workers exposed to HIV received adequate social support, counselling, the source of exposure should be tested for HIV and training on effective coping for all health workers.
CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

HIV (human immunodeficiency virus) is a virus which attacks and destroys the immune system of the infected person by attacking the CD4 positive T cell white blood cells leading to AIDS (Acquired Immunodeficiency Syndrome) with opportunistic infections (Mayo Clinic, 2018). In the year 2017, 36.9 million individuals were infected with HIV worldwide with about 25.5 million of these individuals found in the Sub-Saharan Africa (World Health Organisation, 2018). In Ghana, the 2016 sentinel survey report indicated that the HIV prevalence for 2016 was 2.4%, which was an increase from the 2015 prevalence of 1.8% (Ghana AIDS Commission, 2017). HIV is considered a sexually transmitted disease but can also be transmitted through occupational exposure, mother to child transmission (vertical transmission), parenteral exposure (such as sharing of used needles) and blood transfusion (Gouws & Cuchi, 2012; National AIDS/STI Control Programme, 2016; Patel et al., 2014). HIV has no cure yet but is treated with antiretroviral drugs (National AIDS/STI Control Programme, 2016). Therefore the best way is to prevent the infection of HIV through use of the condom, male circumcision, prevention of mother-to-child transmission with antiretroviral, treatment in individuals with HIV/AIDS, HIV post-exposure prophylaxis antiretroviral treatment and HIV pre-exposure prophylaxis antiretroviral treatment (Maartens, Celum, & Lewin, 2014).

It is reported that in spite of the advancement in practice, technology and decreased hazard exposure incidence in the workplace, occupational hazards are a major cause of disease and death globally (Rushton, 2017). Occupational safety hazards affect more than 59 million healthcare workers worldwide and these occupational hazards include biological, physical,
psychosocial, chemical, ergonomic, fire and explosives, and electrical hazards (World Health Organisation, 2010). Occupational health hazards mostly affect health workers in the low-income countries (Owie & Apanga, 2016), with only 4% of these occupational hazards exposures reported (Phillips, Simwale, Chung, Parker, & Perry, 2012). The health workers and other non-health professionals such as the refuse disposal workers (Haagsma, Tariq, Heederik, & Havelaar, 2012), security officers, public servants, and gardeners are some of the groups of workers occupationally exposed to biological hazards (Dunleavy, Taylor, Gow, Cullen, & Roy, 2012). Biological hazards exposure to health workers may lead to contraction of infectious disease (Haagsma et al., 2012; Rim & Lim, 2014). Some of these infectious diseases acquired through exposure to occupational biological hazards by health workers are blood-borne diseases such as HIV, and hepatitis B and C viral infections (Deuffic-Burban, Delarocque-Astagneau, Abiteboul, Bouvet, & Yazdanpanah, 2011; Haagsma et al., 2012; Romana, Corrao, Mazzotta, Torre, & De Giusti, 2012).

Annually, hundreds of thousands of health workers are occupationally exposed to blood-borne diseases globally (Vaz et al., 2010; Ward & Hartle, 2015). A study found that about fifty percent (50%) of health workers in Africa are occupationally exposed to bodily fluids annually (Auta et al., 2017). One of the most common biological hazards exposed to health workers is the exposure of health workers to blood-borne diseases and it is especially common in the low-income countries (Gupta, Wong, & Kushner, 2014; Phillips et al., 2012). Exposure to blood-borne diseases is described as the contact with blood, tissues and other bodily fluids that are potentially infectious, through percutaneous injury, mucous membrane and non-intact skin (Kuhar et al., 2013). Some of the most common occupationally acquired blood-borne diseases that can be contracted by a health worker are hepatitis B virus, human immunodeficiency virus and hepatitis C virus (Deuffic-Burban et al., 2011; Romana et al., 2012; Ward & Hartle, 2015).

2
HIV is one of the three blood-borne diseases most exposed occupationally to health workers (Weber, Rutala, Eron, 2013; Deuffic-Burban et al., 2011; Ward & Hartle, 2015). The exposure to HIV can be through occupational and non-occupational means such as through needle stick injury and sexual intercourse respectively (Australasian Society for HIV Viral Hepatitis and Sexual Health Medicine, 2016). Occupational exposure to HIV is when the exposure occurs due to work-related activities and mostly affects health workers, law enforcement workers, and waste disposal workers (O’Donnell et al., 2016). The non-occupational exposure to HIV occurs, when an individual gets the exposure to HIV in any way apart from work-related situations such as sexual contact, needle use for drugs and blood transfusion (Malinverni, Libois, Gennotte, La Morté, & Mols, 2016; O’Donnell et al., 2016). Occupational exposure to HIV by health workers occurs when bodily fluids splash on a non-intact skin or mucous membrane and through percutaneous injuries whiles working (Karani, Rangiah, & Ross, 2011; National AIDS/STI Control Programme, 2016; Ward & Hartle, 2015). For instances, the phrase “Occupational exposure to HIV” can be used if a nurse gets injured whiles working with a used needle of a patient who is HIV positive or a patient whose HIV status is not known. The phrase “Occupational exposure to HIV” is not used, for instances where a nurse is raped or shares a needle with a person living with HIV or a person with an unknown HIV status. In this case, the best phrase to use for the latter example is “Non-occupational exposure to HIV”.

Nurses, medical doctors, and laboratory personnel are the health workers mostly occupationally exposed to HIV (Lori, McCullagh, Krueger, & Rockefeller, 2015; Oluwatosin, Oladapo, & Asuzu, 2016). Students from these health professions are also mostly exposed to HIV occupationally (Shivalli, 2014; Tetteh et al., 2015). Nurses are the highest number of health workers exposed to HIV occupationally and they are followed by doctors as the second highest number of health professionals occupationally exposed to HIV.
globally (Jamu, Gabaitiri, Mudongo, & Mwaniki, 2016). The high rate of health workers that are occupationally exposed to HIV is influenced by factors such as the type of healthcare professional (Mashoto, Mubyazi, Makundi, Mohamed, & Malebo, 2013), the type of health department, knowledge level on prevention of exposure to HIV (Shrestha, 2014; Auta et al., 2017), the type of procedure, the age of the health worker (Mbaisi, Ng’ang’a, Wanzala, & Omolo, 2013), and working for more than the recommended forty (40) hours in seven days (Auta et al., 2017). Occupational exposure to HIV is also low among health workers with less than ten (10) years working experience and among female health workers (Tesfay & Habtewold, 2014).

The chances of acquiring HIV after a needle stick injury is about 0.03% to 0.3%, whereas that of exposure to the mucus is 0.09% (Odongkara et al., 2012; Wyżgowski, Rosiek, Grzela, & Leksowski, 2016). Although the chances of being infected with HIV from occupational exposure is very low, it was estimated that about 10% of all health workers infected with HIV/AIDS was through occupational exposure to HIV (World Health Organisation, 2018). The risk of exposure to HIV infection is increased by the high amount of HIV infected bodily fluid, increased viral load, increased in the depth of the skin injury by an infected sharp and injury with a hollow bore blood-filled needle (National AIDS/STI Control Programme, 2016).

A significant number of health workers all over the world have been exposed occupationally to HIV, especially through needle stick injury (Cooke & Stephens, 2017). Similarly, a significant number of health workers have been exposed occupationally to HIV in African countries such as Uganda (Odongkara et al., 2012), Kenya (Mbaisi et al., 2013), Ethiopia (Tesfay & Habtewold, 2014), Cameroon (Nouetchognou, Ateudjieu, Jemea, & Mbanya, 2016), and Ghana (Tetteh et al., 2013). It is estimated that the rate of exposure in Sub-Saharan Africa and Asia is as high as nine exposures per health worker per annum (Gupta
et al., 2008). Another research found that in Sub-Saharan Africa, health workers are 15 times more at risk for occupationally acquired HIV infection than health workers in the high-income countries (Alhassan & Aji, 2012). This high rate of occupational exposure had resulted in low-income countries, especially from the Sub-Sahara Africa having about 90% of all the occupational exposures reported in the world (Auta et al., 2017). This is because, in low-income countries such as Ghana with relatively high HIV prevalence, the rate of exposure to HIV occupationally is also high (Lee, 2009).

The chances of being infected with HIV after an occupational HIV exposure is drastically reduced by the use of the HIV post-exposure prophylaxis regimen but is not 100% effective (Sultan, Benn, & Waters, 2014). HIV post-exposure prophylaxis is the use of antiretroviral treatment for a 28 continuous days to reduce the risk of acquiring human immunodeficiency virus after an occupational or non-occupational HIV exposure (Marfatia, Jose, Baxi, & Shah, 2017; Sultan et al., 2014). According to Marfatia et al., (2017) post-exposure prophylaxis is viewed as an emergency medical response or a group of services provided to prevent contraction of HIV after an occupational or non-occupational exposure to HIV and also specific aspects management of HIV exposure such as first aid response, exposure risk assessment, counselling, HIV laboratory investigation, antiretroviral therapy, support, and follow-up. The post-exposure prophylaxis effectiveness is influenced by the time of starting the PEP, non-adherence to PEP, the source of the virus, penetration of drugs into tissue compartments and continuing high-risk exposure behaviour (Sultan et al., 2014).

The post-exposure prophylaxis regimen is recommended to start ideally within one (1) to two (2) hours after the HIV exposure but should not start after 72 hours and it is further taken till 28 days (Cresswell et al., 2016; National AIDS/STI Control Programme, 2016). The combined antiretroviral therapy is used in HIV post-exposure prophylaxis and in adults it consists of a three-drug combination of Tenofovir 300mg daily, Lamivudine 150mg 12
hourly or Emtricitabine 200mg daily and Ritonavir-boosted 400mg with Lopinavir 100mg 12 hourly for 28 days (National AIDS/STI Control Programme, 2016). The side effects of the recommended antiretroviral drugs are dizziness, diarrhoea, rash, loss of memory, numbness, nightmares, abdominal pains, (Chen et al., 2013) headaches, fatigue, drowsiness, insomnia, general body pains, and nausea (Tetteh et al., 2015). Peripheral neuropathy, hypersensitivity, dyslipidaemia, lipodystrophy, neutropenia, and nephrotoxicity are some of the rare and serious side effects of post-exposure prophylaxis (National AIDS/STI Control Programme, 2016). The recommended follow-up visits for HIV post-exposure prophylaxis management which is to check for HIV status and drug toxicity (that is full blood count and liver functioning test) are day one, two weeks, six weeks, twelve weeks and twenty four weeks after the HIV exposure (National AIDS/STI Control Programme, 2016).

The problems with HIV post-exposure prophylaxis include the following: the under-reporting of the occupational HIV exposure, timely access to the PEP, non-adherence to the PEP, inadequate follow-ups and poor support systems (Sultan et al., 2014). There is also a significant number of health workers who are not aware and do not use the post-exposure prophylaxis after an exposure (Singh, Kumar, Rawat, & Rawat, 2015). A significant number of health workers on post-exposure prophylaxis do not complete the course and it has been reported in a research in Nigeria where only two-thirds of the participants out of the 8.8% who started the post-exposure prophylaxis did not complete (Ajibola, Akinbami, Elikwu, Odesanya, & Uche, 2014). According to a study in Korle Bu Teaching Hospital Ghana, the main reason for not completing the post-exposure prophylaxis was because of adverse reaction from the antiretroviral medication (Tetteh et al., 2015). The reason for not reporting occupational HIV exposure and avoided post-exposure prophylaxis treatment are due to inadequate knowledge on post-exposure prophylaxis, the fear of the stigma attached to post-exposure prophylaxis and side effects of the antiretroviral drugs (Mill, Nderitu, & Richter,
Similarly, drinking alcohol, gender and reporting HIV exposure were factors affecting HIV post-exposure prophylaxis use after an exposure to HIV (Beyera & Chercos, 2015).

Apart from the risk of acquiring HIV, the occupational exposures to blood-borne diseases, especially HIV can lead to serious stressful outcomes such as anxiety, post-traumatic anxiety disorder and depression for the affected health worker (Sharma, Rasania, Verma, & Singh, 2010; Wald, 2009; Wicker, Jung, Allwinn, Gottschalk, & Rabenau, 2008; Green & Griffiths, 2013). There is also a chance of acquiring other blood-borne infections such as Hepatitis B virus and Hepatitis C virus (Lee, 2009). Health workers experience anxiety, post-traumatic anxiety disorder, and depression after an HIV exposure whiles working because of the perceived chance of acquiring HIV (Green & Griffiths, 2013) and the fear of the perceived negative response or stigma from people (Wald, 2009). These effects on the health workers lead to time lost at work (Wald, 2009). Some of the health workers felt guilty after the occupational exposure to HIV due to blaming self for not following standard precautions (Jeong et al., 2016). Health workers normally experience anxiety immediately after the occupational HIV exposure, through the post-exposure prophylaxis to the time the health worker is confirmed for not acquiring HIV (Mohammadnejad, Dehghan Nayeri, & Hajiesmaeilpoor, 2017; Green & Griffiths, 2013; Wald, 2009). HIV occupational exposure can also lead to social issues such as halting their normal sex life, stigma from friends and family and prejudice against the affected individuals which went on for months until they tested negative (Padilha & Villarinho, 2015). Some of the health workers occupationally exposed to HIV halted the normal sexual activities with their partners because of fear of infecting the partner or the partners’ fear of acquiring HIV from them (Lin, Li, Wu, Wu, & Jia, 2008; Wald, 2009). The perceived stigma from family and friends may come from the suspicion that health workers occupationally exposed to HIV did not get exposed to HIV.
Exploring Occupational Exposure to HIV and Coping

occupationally but through sexual exposure that is immoral (Lin et al., 2008). Health workers also felt the loss of their health status after the occupational HIV exposure (Ziady, 2008). Health workers also felt shocked, life threatened and vulnerable after the occupational exposure to HIV (Daley & DeMarco, 2010). All these effects of the occupational exposure to HIV need to be dealt with by coping.

Health workers have to cope with the fear and anxiety of acquiring a serious blood-borne disease such as HIV (Jeong et al., 2016). Health workers also have to properly cope with the side effects of the antiretroviral drugs to reduce the non-adherence (Tetteh et al., 2015). The term coping is defined as encompassing “efforts to prevent or diminish threat, harm, and loss, or to reduce associated distress” (Carver & Connor-Smith, 2010). In general, health workers such as nurses cope with occupational stress by isolating self from people, displacement, getting drunk, engaging self with activities, smoking, using social media such as Facebook, socialising with friends, sleep (Happell et al., 2013) and quit their jobs (World Health Organisation, 2010). These coping strategies used by health workers can be classified into active and passive coping strategies (Schreuder et al., 2012). Active coping strategies are actions such as reporting occupational exposure incidence, searching for information and adhering to PEP, are taken to solve the problem causing distress whereas passive coping strategies encompass, doing things such as denial, avoidance, and spirituality, that is not aimed at solving the problem causing the distress (Jeong et al., 2016; Carver & Connor-Smith, 2010; Graham, 2015).

The situation in Ghana concerning health workers occupationally exposed to HIV and how they cope seems to be bad especially in the public health facilities where resources are so scarce (Donkor, Yekple, & Affram, 2014). Hence provision of personal protective clothing and infection prevention material is a problem. The researcher’s observation as a nurse who has worked at the various public hospitals in Ghana is that health workers are frequently
Exploring Occupational Exposure to HIV and Coping

occupationally exposed to HIV but their stories are not known and explored. Furthermore, the data collected on health workers occupationally exposed to HIV is very poor and the rate of under-reporting the incidence of HIV exposure is also low in Ghana (Kommogldomo, 2016). Similarly, other low-income countries such as Ethiopia also lack adequate data on occupational exposure to blood-borne diseases such as HIV (Tesfay & Habtewold, 2014). There are studies that looked at various aspects of occupational exposure to HIV such as post-exposure prophylaxis (Tetteh et al., 2013, 2015) but it seems that only a few studies in Ghana explored health workers’ occupational exposure to HIV and how they cope; hence the need to explore occupational exposure to HIV and coping by health workers.

1.2 Problem Statement

The exposure of health workers to HIV at the workplace is immensely detrimental to the wellbeing of these health workers (Green, & Griffiths, 2013; Lin et al., 2008). Yet, globally a vast number of health workers are exposed to HIV while working (Cooke & Stephens, 2017; Vaz et al., 2010; Ward & Hartle, 2015). Health workers in low-income countries such as Ghana are most affected with the occupational exposure to HIV (Auta et al., 2017; Alhassan & Aji, 2012). In Ghana, a study found that two hundred and sixty (260) health workers in the Korle Bu Teaching Hospital reported within five (5) years for HIV post-exposure prophylaxis treatment after being exposed to HIV as a result of their work (Tetteh et al., 2013). This number may represent only the few health workers who report after the occupational HIV exposure. This is because most health workers exposed to HIV whiles working do not report the incidence (Abiola et al., 2013; Ajibola, Akinbami, Elikwu, Odesanya, & Uche, 2014; Nouetchognou et al., 2016; Oluwatosin et al., 2016). Therefore, the occupational exposure to HIV can be deduced to be a widespread occurrence at the Korle Bu Teaching Hospital, especially when the unreported incidences of HIV exposures are considered. Occupational exposure to HIV by health workers is known to cause so much
stress which affects the quality of life of these affected health workers and leads to severe conditions such as depression and post-traumatic anxiety disorders (Cooke & Stephens, 2017; Green & Griffiths, 2013).

The researcher’s observation as a nurse who has worked in a number of public hospitals in Ghana is that a lot of health workers are exposed to HIV while working and they experience a high level of stress and change in their lives as a result. By observation and interaction, these health workers exposed to HIV due to their work had so much to share about the scary experiences of being exposed to HIV while working and how they coped. The stories of these health workers exposed to HIV and how they coped with it are rarely told in Ghana even though they are so common. It was also observed that there seemed to be inadequate data about occupational HIV exposure in Ghana, especially relating to quantitative research after extensive literature search. This is supported by a study in Ghana that reported that there was inadequate data about occupational exposure to HIV in Ghana (Kommogldomo, 2016). Another study in South Korea also revealed that it seemed that there was little literature on the experience of health workers exposed to HIV while working (Jeong et al., 2016).

In the light of the understanding that a significantly large number of health workers are exposed to HIV whiles working and the fact that there seems to be little information about occupational HIV exposure and coping with it in Ghana, there is the need for exploring the HIV exposure whiles working and the coping strategies used by health workers at the Korle Bu Teaching Hospital.

1.3 The Purpose of the Study

The purpose of this study was to explore the occupational exposure to HIV and how health workers coped with it.
1.4 The objectives of the Study

The objectives of the study were derived from the transactional model of stress and coping. Specifically, the first three objectives came from the Primary cognitive and the Secondary appraisals and the last objective came from the coping efforts of the transactional model of stress and coping. The perceived causes under the objective was derived from the primary appraisals as this theme in the model describes the causes of stress. The challenges and the effects of occupational exposure to HIV as objectives were derived from the Primary cognitive appraisals as this theme in the model describes the impact of the stress. The coping strategies as an objective was derived from the Coping effects as this theme in the model describes the emotional-based, problem-based and meaning-based coping.

The objectives to be achieved by the end of the study were to:

1. Identify the perceived causes of the occupational exposure to HIV.
2. Find out the challenges faced by health workers who have been exposed to HIV at work.
3. Ascertain the effects of the occupational exposure to HIV on the lives of the affected health workers.
4. Describe the coping strategies used by the health workers occupationally exposed to HIV until confirmed HIV negative.

1.5 Research Questions

The research answered all the following questions:

1. What are the perceived causes of the occupational exposure to HIV?
2. What are the challenges faced by health workers who have been exposed to HIV at work?
3. What are the effects of the occupational exposure to HIV on the lives of the affected health worker?

4. What are coping strategies used by health workers occupationally exposed to HIV until confirmed HIV negative?

1.6 The significance of the Study

The knowledge gained from the study will help improve the preventive measures against occupational exposure to HIV. It will improve the training programmes offered health workers on occupational exposure to HIV in Ghana. It will help society understand what health workers occupationally exposed to HIV experience in order to improve the care and support given them. The finding will also help in developing a better rehabilitation program to improve the quality of life of health workers exposed to HIV occupationally. The study will also serve as resource material for health workers exposed to HIV whiles working to cope with the stress of the HIV exposure. The study assisted in discovering the need for a further study on the effects of occupational exposure on the care of the patient with HIV. The findings of this study added knowledge to the area of health workers occupational exposure to HIV.

1.7 Operational Definitions

**Health worker:** It is any nurse, midwife, doctor, medical laboratory personnel, enrolled nurses, and health assistant who works in the acute care setting.

**HIV exposure:** It is the contact with potentially HIV infectious blood, tissues and other bodily fluids (except saliva, urine, and sweat), through injury to the skin, mucous membrane and non-intact skin.

**Stress:** It is the human body’s response to any kind of threat.

**Coping:** It is the ability of an individual to live with and overcome stress.
Strategy: It is a plan to achieve an objective (English Oxford Living Dictionaries, 2018).

Explore: It is to search to examine and discuss a concept or phenomenon comprehensively (Macmillan Dictionary, 2018).

Systemic care lapses: They are omissions and mistakes that occur in the process of caring for a health worker who has been occupationally exposed to HIV.

In the next chapter, the conceptual framework and the literature review are discussed.
CHAPTER TWO

CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

2.1 Introduction

In this chapter, the conceptual model and current literature on occupational exposure to HIV and coping with the exposure by health workers are discussed. This chapter discusses the Conceptual model (Transactional Model of Stress and Coping), causes of occupational HIV exposure, challenges to health workers, effects of occupational HIV exposure on health workers’ lives, and coping strategies. A search was conducted to explore what information was available on coping with occupational exposure of health workers to HIV in regard to the causes of occupational HIV exposure, challenges to health workers, the effect of occupational HIV exposure on health workers’ lives and coping strategies used. A literature search was done in the University of Ghana library and the internet databases. The internet search covered articles from databases such as Science Direct, MEDLINE, PubMed, CINAHL, EBSCOhost, JSTOR, SciFinder, Scopus and Taylor & Francis. The key words or phrases used in the internet search were, “occupational exposure”, “HIV”, “HIV exposure at work”, “health worker”, “needle stick injury”, “post-exposure prophylaxis”, “blood-borne diseases”, “coping”, “stress”, “HIV/AIDS”, and “side effects of post-exposure prophylaxis”. The phrase “occupational exposure to HIV” was used together with words such as “experience”, “causes”, “effects”, “challenges”, and “coping” in the literature search. The word “qualitative” was also added to the phrases to find relevant studies relating to occupational exposure to HIV and coping by health workers.

The search identified various studies on occupational exposure to HIV and coping. However, most of the studies focused on health workers’ occupational exposure to blood-borne diseases (Mandić, Mandić-Rajčević, Marković-Denić, & Bulat, 2017; Samargandy et al., 2016). A large number of the studies also looked at the health workers’ knowledge and
perception on occupational exposure to HIV (Isah, Igboeli, Adibe, & Ukwe, 2016; Akinbọro, Adejumo, Onibokun, Olowokere, & Akinbọro, 2012; Leszczyszyn-Pynka, Klys-Rachwalska, Sacharczuk, & Borono-Kaczmarska, 2015; Papavarnavas, Manning, Conrad, Govender, & Maartens, 2017). Other studies also investigated needlestick or sharp injuries among health workers (Afridi, Kumar, & Sayani, 2013; Lori et al., 2015). Many other studies focused on HIV post-exposure prophylaxis among health workers with its side effects (Ajibola et al., 2014; Olaleye et al., 2013; Tetteh et al., 2015). A few of the studies looked at health workers’ experiences of occupational exposure to HIV (Daley & DeMarco, 2010; Mohammadnejad et al., 2017). A very small number of the studies also dealt with health workers’ coping with occupational exposure to HIV (Jeong et al., 2016). However, it seems there was few studies on health workers’ occupational exposure to HIV and how they coped in Ghana. Most of the studies found were quantitative in nature with a relatively few being qualitative designs.

2.2 Conceptual Model

The transactional model of stress and coping (figure 1) by Richard Lazarus and Susan Folkman (1984) was used in this study. According to Lazarus and Folkman “psychological stress is a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being” (Lazarus & Folkman, 1984, p. 19). They explained that, this relationship passes through two main stages comprising of cognitive appraisal and coping. The transactional model of stress and coping management consists of concepts such as stress, primary cognitive appraisal, secondary appraisal, meaning-based coping, coping effort, personality disposition, coping style, social support and adaptive coping outcomes (Glanz & Schwartz, 2008). It shows the interaction or transaction between the people and their environment (Lazarus & Folkman, 1984). The stress is the perceived threat or challenge due to life
changes which leads to the primary appraisal, which is how a person perceives the severity, susceptibility, effect and the cause of the stress (Graham, 2015). The secondary appraisal is the resources available to solve the problem (Harvey, Nathens, Bandiera, & Leblanc, 2010). These resources needed to solve the problem can be grouped into the physical, psychological, economic, spiritual and social resources (Lazarus & Folkman, 1984). Each of these groups may be utilized by the individual depending on the problem being faced. It appraises the ability to control and emotionally manage stressors. If the secondary appraisal indicates lack of ability to deal with the stress then the emotion-based coping is used, but if the secondary appraisal indicates an ability to solve the problem then the problem-focus coping is used to deal with the stress. They also indicated that coping efforts such as the emotion-based and problem-based coping depends on other processes such as social support, personality characteristics, and “meaning-based coping”. The “meaning-based coping” looks at approaches that concentrate on positive methods to successfully deal with stress such as positively reframing what the situation is, altering goals to address the situation, and examine spiritual beliefs in order to discover positive meaning (Graham, 2015).

Dispositional coping styles consist of the social support and personality traits such as optimism which are thought to be comparatively unchanging with time and which influences a person’s views and coping abilities (Glanz & Schwartz, 2008). They viewed that dispositional coping styles directly affect stress appraisal, coping efforts, “meaning-based coping”, and adaptive outcomes. Social support affects how a person views stress and the success of coping efforts. These social support influences coping strategies and adaptation which result in both positive and adverse ways, depending on the existence or non-existence of healthy interpersonal relationships. Glanz and Schwartz, finally indicated that evaluating
and coping efforts do affect the adaptation outcome to stress, which is as a result of emotional well-being, functional status, and health behaviours.

It is important to know that the objectives of the study were derived from the problem statement but was guided by the transactional model of stress and coping management. The model discussed in this section also helped the researcher to understand how health workers cope with occupational exposure to HIV. In situating the model in this study, the model's main concepts such as the primary appraisal, secondary appraisal and the coping effort (Graham, 2015) were used to help the researcher understand the study area. In this study, the objectives: “to identify the perceived causes of the occupational exposure to HIV”, “to find out the challenges faced by healthcare workers who have been exposed to HIV at work” and “to find the effects of occupational exposure to HIV on the lives of the affected healthcare worker” were related to the “primary appraisal” concept in the model. The “secondary appraisal” concept in the model helped the researcher to understand the various resources available to the health workers who have been occupationally exposed to HIV in order to solve the problem and manage their emotions. Some of the resources available to these affected health workers were the expectation that there was the availability of HIV post-exposure prophylaxis treatment, HIV testing of the source of exposure, follow up HIV testing of the affected health worker, professional counselling, sick leave and the expectation that he/she will receive social support. The study objective: “to find out the challenges faced by healthcare workers who have been exposed to HIV at work” was also related to the “secondary appraisal” concept which also considers resources for coping and hence challenges to coping will also be considered. “To explore the coping strategies used by the healthcare workers occupationally exposed to HIV till confirmed HIV negative” which was the last objective of the study was related to the “coping effort” concept of the model. The “adaptive coping outcomes” concept in the model was used in helping the
researcher to understand what indicates successful coping such as emotional well-being, adhering to antiretroviral treatment, functional status, and health behaviours.

Other models on coping that were found in the literature were Conservation of Resources Theory (Hobfoll, 2011), and Repression-Sensitization Model (Krohne & Hock, 2011). According to the Conservation of Resources Theory, persons attempt to preserve, safeguard and build resources so as to avoid stress (Hobfoll, 2011). Repression-Sensitization Model is a trait-oriented coping theory which explains a person’s cognitive response to stress by being within two poles, namely “vigilance and cognitive avoidance” concept in which vigilance is constantly worried whiles cognitive avoidance denies the existence of the stress in order to cope (Krohne & Hock, 2011). The Conservation of Resources Theory was not appropriate for this study because it focuses on prevention of stress while this study area focused on dealing with an existing stress. The Repression-Sensitization Model was also not appropriate for this study because it focuses on only the person’s trait to cope, that is their internal resources to cope while this study area investigated both the internal and external resources for coping.

Transactional model of stress and coping was selected as the most appropriate model because the model was able to assess stress in the environment and also to identify unique resources which are accessible to the person to deal with the stress (Lazarus & Folkman, 1984) which was relevant to health workers coping with occupational exposure to HIV. The model was also selected as appropriate because the meaning of the concepts in the model was consistent with the objectives of the study and it gave a broad scope to explore the occupational exposure to HIV and coping with it by health workers. In simple terms, the transactional model of stress and coping was used in this study because it assesses stress in the environment and also identifies unique resources which is accessible to the person in order to deal challenges relevant to health workers coping with occupational exposure to
HIV. Transactional model of stress and coping was used in this study to help appraise the stress from the occupational exposure to HIV through the use of the primary cognitive and secondary appraisals themes from the model. The model was also used to help identify the various coping efforts such as the emotional-based, problem-based and meaning-based coping that were used by health workers occupationally exposed to HIV.

The next section looks at the pictorial form of the Transactional model of stress and coping with the various constructs, namely; the stress, Primary cognitive appraisals, Secondary appraisals, Coping efforts and Adaptation or outcome. The Primary cognitive appraisals consist of the perceived susceptibility, severity, causality and impacts of the stress. The Secondary appraisals consists of the perceived control over emotions, perceived self-efficacy and perceived control over outcomes. When a person is stressed, he or she will appraise or assess the stress using the primary cognitive and secondary appraisals. Based on the primary cognitive and secondary appraisals, coping efforts such as the emotional-based, problem-based and meaning-based coping are used to deal with the stress. Based on the coping efforts, the person may finally result in adaptation or outcomes such as improved emotional well-being, good functional status and improved health behaviours.
2.3 Causes of Occupational HIV Exposure

Studies indicated that the prevalence of occupational HIV exposure is significantly high (Tesfay & Habtewold, 2014). This high rate of occupational HIV exposure results from various causes. The causes of occupational HIV exposure are described as the contact with blood, tissues and other bodily fluids that are possibly HIV infected, through injury to the skin, mucous membrane and non-intact skin (Kuhar et al., 2013). In other literature, the causes of occupational exposure to HIV were found to be through injuries from any HIV infected bodily fluid exposed sharps such as needles or any sharp objects and contact of
HIV infected bodily fluid in the mouth, eyes, nose and on broken skin (National AIDS/STI Control Programme, 2016). Similarly, other studies indicated that the causes of occupational exposure to HIV consist of needlestick injuries, bodily fluids splash on the body, sharp injuries, and any other contact with the body by bodily fluid (Nouetchognou et al., 2016; Odongkara et al., 2012).

Poor attitude or non-compliance toward the standard precautions leads to the cause of occupational HIV exposure (Akinboro et al., 2012; Anju et al., 2012; Leszczyszyn-Pynka et al., 2015; Reda, Fisseha, Mengistie, & Vandeweerd, 2010). Other studies attributed the causes of occupational exposure to HIV by a health worker to other factors such as fatigue, rushing, and lack of assistance at work (Sharma et al., 2010). Other factors that lead to occupational exposure to HIV are the type of healthcare professional (Mashoto et al., 2013), the type of health department, knowledge level on prevention of exposure to HIV (Shrestha, 2014), the type of procedure, the age of the health worker (Mbaisi et al., 2013), and working for more than forty (40) hours each week (Auta et al., 2017). Occupational exposure to HIV is also high among health workers with more than ten (10) years working experience and among male health workers (Tesfay & Habtewold, 2014).

Studies have shown that the most common cause of occupational exposure to HIV was through sharp injuries such as needle stick injury, and the blade cuts to the skin (Jaybhaye et al., 2014; Kumakech, Achora, Berggren, & Bajunirwe, 2011; Shriyan & Annamma, 2012). Some of the sharps involved in sharp injuries are hollow bore needle, suture needle, lancet, scalpels, razor, glass, trocar, wire and curette (Samargandy et al., 2016). Sharp injuries are so common that a study showed about 14.9% to 69.4% of health workers reporting needlestick injuries annually depending on the country, research setting and the method used to calculate the rate (Cooke & Stephens, 2017). The common site for sharp or needle injuries are on the hands, fingertips, face, and eyes (Motaarefi, Mahmoudi,
Mohammadi, & Hasanpour-Dehkordi, 2016). The hands and the fingertips are some of the common site for sharp injuries, probably because they are used in a lot of procedures involving sharps such as injections, suturing and incisions. There were various causes that lead to needle stick injuries. The improper disposal of needles was the most common cause of needle injuries among health workers whiles working (Anju et al., 2012; Bobby et al., 2011; Serinken, Karcioglu, Kutlu, Sener, & Keysan, 2009). The improper disposal of needles will lead to easy access to used needles in the work environment, which will increase chances of needle injury. Other causes of occupational exposure to HIV through needle injury include, the practice of recapping of the needle (Anju et al., 2012; Reda et al., 2010; Sharma et al., 2010) during the administration of injection (Shriyan & Annamma, 2012; Tetteh et al., 2013), collection of blood sample, suturing, handling uncooperative patients, patient movements (Mbaisi et al., 2013) and improper disposal of sharps (Samargandy et al., 2016). Needlestick injuries are more common among nurses and resident doctors (Jaybhaye et al., 2014). This may be due to the frequent use of sharps whiles working as a nurse or a resident doctor.

The next main cause of occupational exposure to HIV among health workers is through a splash of bodily fluids such as blood, and amniotic fluid on a non-intact skin or mucous membrane of the eyes, nose or mouth (Serinken et al., 2009; Sreedharan, Muttappallymyalil, & Venkatramana, 2010). The sites of HIV exposure to bodily fluids splash is the arms, face, neck, hands, legs, and trunk of the body (Nwaiwu, Egro, Smith, Harper, & Spiess, 2017). In relation to all the sites of bodily fluid splash HIV exposure, the most common site of the occupational HIV exposure occurs through the mucous membrane of the eyes (Leiss, Sousa, & Boal, 2009). The cause of splash of bodily fluids are mishandling of syringes, arterial injuries, handling uncooperative clients, whiles disposing of bodily fluids, during delivery of babies, and improper handling of specimen bottle (Mbaisi et al., 2013).
In order to protect the health worker from these causes of occupational exposure to HIV. It is recommended that health workers adhere to the standard precautions especially, the use of protective clothing such as boots, plastic apron, plastic hair cap, eye goggles, gloves and face shield for any procedure that is likely to lead to a splash of bodily fluids, in order to protect health workers from occupational exposure to HIV (National AIDS/STI Control Programme, 2016). It should be an emphasis that, most of the causes of occupational exposure to HIV are preventable (Kumakech et al., 2011).

2.4 Challenges to Health Workers

There are a lot of challenges that health workers occupationally exposed to HIV face. They consist of side effects of the post-exposure prophylaxis, mistakes in the care after the exposure, stigma and inadequate support.

The side effect of the post-exposure prophylaxis medication was seen as a major challenge to health workers in the management of the HIV occupational exposure (Tetteh et al., 2015). Some of the side effects of PEP were vomiting, nausea, dry mouth, diarrhoea, weight loss or gain, dizziness, numbness, skin rash, nightmares, depressive mood (Chen et al., 2013; National Health Service United Kingdom, 2015), headache, fatigue, weakness, anorexia, general body pains, fever, itching, jaundice, abdominal pains and malaise (International Association of Providers of AIDS Care, 2014; National Health Service United Kingdom, 2015; Tetteh et al., 2015). These side effects of the post-exposure prophylaxis were a challenge because it resulted in health workers exposed to HIV occupationally stopping or not adhering to the post-exposure prophylaxis which put them at a higher risk of acquiring the HIV infection (van der Maaten et al., 2010; Mill et al., 2014; National AIDS/STI Control Programme, 2016; Tetteh et al., 2015). These side effects are so discomforting to the affected health worker that it may even negatively affect their quality of life (Chen et al., 2013). Sometimes, alternative antiretroviral drugs with more tolerable side effects are given.
to enhance adherence to the PEP medications (Chen et al., 2013). In cases of severe side effects from the post-exposure prophylaxis treatment such as hepatitis and hypersensitivity, (Office of AIDS Research Advisory Council, 2018) the PEP medication is withheld to prevent further complication to the health workers (Tetteh et al., 2015).

Care lapse is another major challenge faced by health workers exposed to HIV. Sometimes the starting of an HIV post-exposure prophylaxis treatment by a health workers can be delayed for more than seventy two (72) hours after the occupational HIV exposure due to delay in the laboratory reporting a positive result from the source of exposure (Anju et al., 2012; Upjohn, Stuart, Korman, & Woolley, 2012). In other situations, HIV post-exposure prophylaxis is unavailable to be administered to affected health workers (Olaleye et al., 2013). The unavailability of post-exposure prophylaxis especially during weekends and in the nights are as a result of a bad organisational system in which nobody is available to serve the PEP to the affected health workers (Kumakech et al., 2011). Some hospitals do not even have available PEP guidelines which affected health workers can follow to ensure the prevention of the HIV infection (Kabyemera, Kalolo, Fernando, & Bergson, 2015). This is a major lapse from the health organisation to ensure affected health workers have easy knowledge of what to do after an occupational HIV exposure. Another care lapse occurs when the chance to test the source of the HIV exposure is not taken resulting in the inability to know the HIV status of the source of exposure (Owolabi et al., 2012). This causes unnecessary administration of PEP with its accompanied side effects if the source of exposure was HIV negative. There is an instance where the unsuitable type of antiretroviral drugs not recommended for post-exposure prophylaxis due to its severe side effects may be administered to affected health workers (Kuhar et al., 2013). Some HIV exposed health workers were not provided with the recommended follow-ups required for PEP treatment which resulted in poor adherence to the PEP (van der Maaten et al., 2010). This is also a
lapse in the organisational system of health facilities to ensure adherence to PEP and proper care after the HIV exposure.

Another challenge was the inadequate or ineffective support of the health workers exposed to HIV in the sense of being comforted, reassured and cared for by occupational health staff (Daley & DeMarco, 2010). For instance, occupational health staff can support health workers exposed to HIV by talking to them, enquiring for side effects of the PEP and listening to their worries (Lin et al., 2008). Occupational health staff may not even call health workers exposed to HIV to find out how they are doing or feeling. In some cases rather than getting support from co-workers, they are stigmatized (Mill et al., 2014). In other cases, health workers exposed to HIV are blamed rather than comforted by the organisation for not preventing the HIV exposure (Owie & Awingura, 2016). If this challenge of inadequate support is dealt with, it may enhance adherence to HIV post-exposure prophylaxis (Mendelson & Meintjes, 2009; Padilha & Villarinho, 2015).

2.5 The Effects of Occupational HIV Exposure on Health Workers’ Lives

The effects of occupational exposure to HIV on the health workers’ lives were reviewed under the following areas: acquiring HIV and other blood-borne diseases, suffering the side effects of the post-exposure prophylaxis, psychological effects, social or interpersonal effects, and improved attitudes towards infection prevention and people living with HIV.

The major consequence of occupational exposure to HIV is acquiring HIV infection and even other blood-borne infectious diseases such as Hepatitis B virus and Hepatitis C virus (Lee, 2009). In general, the number of health workers who get HIV after occupational exposure to HIV is few in number (Centers for Disease Control and Prevention, 2016). This limited transmission of HIV infection after an occupational exposure to HIV is because the
chances of acquiring HIV after a needle stick injury is about 0.3%, whiles that of exposure to the mucous is 0.09% which is low in chance (Odongkara et al., 2012).

The impact of side effects of post-exposure prophylaxis on health workers is an indirect effect from the occupational exposure to HIV. Health workers on PEP treatment may experience side effects such as vomiting, nausea, dry mouth, diarrhoea, weight loss or gain, dizziness, numbness, skin rash, nightmares, depressive mood (Chen et al., 2013; National Health Service United Kingdom, 2015), headache, fatigue, weakness, anorexia, general body pains, fever, itching, jaundice, abdominal pains and malaise (International Association of Providers of AIDS Care, 2014; National Health Service United Kingdom, 2015; Tetteh et al., 2015). The side effects of PEP physically affected health workers which results in a significant number of them discontinuing the PEP medication (Olaleye et al., 2013). Some of the side effect of PEP are so serious and life-threatening that they lead to hospitalization and complications (Chen et al., 2013). The side effects of PEP are discomforting to health workers and affect their quality of life as they physically feel the pains, weakness, irritation and the inability to properly perform some of the activities of daily living such as cooking, eating, and bathing (Chen et al., 2013; Oguntibeju, 2012). Health facilities offer health workers occupationally exposed to HIV sick leave because of these side effect of the HIV post-exposure prophylaxis (van der Maaten et al., 2010; Tetteh et al., 2015).

Apart from the physical effects, health workers experience emotional effects, some of which are very serious (Cooke & Stephens, 2017). A health worker who is exposed to HIV occupationally experiences emotions such as fear, anxiety, anger, guilt, sadness, (Vieira & Padilha, 2008) and even severe emotional effects such as depression and post-traumatic anxiety disorder (Green & Griffiths, 2013). It is known that almost all health workers experience fear or anxiety immediately after occupational exposure to HIV (Daley & DeMarco, 2010; Jeong et al., 2016; Lee, 2009). Other health workers exposed to HIV
occupationally experience fear of being stigmatized if found to be on the post-exposure prophylaxis due to the perception of people that they may have been infected with HIV (Mill et al., 2014). These health workers exposed to HIV may also feel shocked, life threatened, and vulnerable (Daley & DeMarco, 2010). Some health workers experience grief as a result of the loss of the idea of being healthy and the experience of the side effect of antiretroviral drugs (Ziady, 2008). Some of these emotional effects such as anxiety, guilt, depression and even post-traumatic anxiety disorder (PTAD) suffered by health workers occupationally exposed to HIV may lead to time lost at work (Wald, 2009) as they are offered sick leave (van der Maaten et al., 2010; Tetteh et al., 2015). These emotional effects are normally relieved by the knowledge that they will not get infected with HIV or the source of exposure is HIV negative (Cowan & Macklin, 2012; Wald, 2009). Some health workers continue to experience some emotional effects such as anxiety after they have been confirmed that they were not infected with the HIV (Green & Griffiths, 2013). Health workers exposed to HIV experience anger when they blame other people for the cause of the occupational exposure to HIV (Wald, 2009). Guilt is also felt as a result of health workers blaming themselves for not following the recommended precautions to prevent the HIV exposure and being the cause for the occupational exposure (Daley & DeMarco, 2010; Jeong et al., 2016).

HIV occupational exposure can also lead to social effects such as halting in their normal sex life, stigma from friends and family and prejudice against the affected individuals which go on for months until they test negative (Padilha & Villarinho, 2015). Health workers occupationally exposed to HIV are sometimes blamed by their supervisors for the incidences which result in the loss of trust and confidence in the relationship with their supervisors which may lead to the fear to report future incidence of HIV occupational exposures (Jeong et al., 2016). Health workers occupationally exposed to HIV had deterioration in their relationships with their sexual partners as they withheld sex from their partners due to the
fear of infecting their partners through sex (Green & Griffiths, 2013; Lin et al., 2008). Other studies also revealed that health workers experience deterioration in the relationships with friends, family, co-workers, and patients after the occupational exposure which may be due to blaming, anger, fear, and unfulfilled expectation from these individuals (Daley & DeMarco, 2010; Wald, 2009). The deterioration in a relationship as a result of perceived stigma from family and friends may come from the suspicion that health workers occupationally exposed to HIV did not get exposed to HIV occupationally but through sexual exposure that is immoral (Lin et al., 2008). All these social effects of occupational exposure to HIV may lead to poor care of patients living with HIV, under reporting of HIV exposure incidence, reducing adherence to PEP, and reducing the quality of life of the health worker.

The effect on health workers’ occupational exposure to HIV is the strict adherence to the recommended standard precaution to prevent future occupational HIV exposures (Jeong et al., 2016). Another effect on health workers’ lives after the occupational exposure is the discrimination or refusal to care for patients living with HIV for the fear of being exposed to HIV again (Lee, 2009). Similarly, some of the health workers also tend to avoid or fear certain procedures that increase their risk of getting exposed to HIV (Mill et al., 2014). Some studies revealed that health workers developed appreciation and empathy for individuals living with HIV in relation to the fear of being infected with HIV and side effects of the antiretroviral therapy (Daley & DeMarco, 2010; Ziady, 2008); this reduces stigmatization of people living with HIV by these affected health workers (Lin, Li, Wan, Wu, & Yan, 2012).

### 2.6 Coping Strategies

Lazarus and Folkman defined coping as the constantly changing cognitive and behavioural efforts to manage specific external and or internal demands that are appraised as taxing or
exceeding the resources of the person (Woltin, Sassenberg, & Albayrak, 2018). Coping strategies are psychological patterns that a person uses to manage feelings, thoughts, and actions encountered during stress situations and treatments (Franklin, 2014). Coping strategies also reflect the range of responses to the stress that the person has access to and can utilise successfully (Sahler & Carr, 2009). In general, the use of coping strategies differs in relation to the occupation, country, gender (Mazzola, Schonfeld, & Spector, 2011) and culture (Kim, Sherman, & Taylor, 2008). A study by Jeong et al. (2016), found that health workers occupationally exposed to HIV normally use the active and/or passive coping methods. Problem-based and emotion-based coping are also called active and passive coping, grounded on the absence (passive) or presence (active) of attempts to deal with the stressful situation (Puglisi-Allegra & Andolina, 2015). Active coping mechanism is a positive coping strategy which deals directly through attacking or avoiding stressful situations, whereas passive coping mechanism mainly consist of managing the emotion elicit by the stress (Hobfoll, Tirone, Holmgreen, & Gerhart, 2016). Passive coping strategies included avoiding the report of the HIV exposure, fall on religious belief and an unrealistic belief that everything will be well, which are also negative coping strategy (Jeong et al., 2016). The positive coping strategies help the individual in solving the problem causing the stress whereas the negative coping strategies are harmful (Hirsch et al., 2015).

There are a number of specific coping strategies used by health workers occupationally exposed to HIV such as caring for the site of the HIV exposure, reporting the incidence, adhering to the HIV post-exposure prophylaxis treatment, praying to God, avoiding of the PEP due to side effects and not reporting the incidence (Daley & DeMarco, 2010; Jeong et al., 2016). Some health workers cope by initially denying the occurrence of the occupational HIV exposure (Ziady, 2008). Furthermore, literature also viewed reassurance, social
support, and searching for information on occupational exposure to HIV as ways to enhance coping (Green & Griffiths, 2013; Hirsch et al., 2015).

Problem-focused or active coping is intended at resolving the stressful situation or changing the source of the stress and involves solving the problem or eliminating the source of the stress, looking for information or help in dealing with the situation, and taking away oneself from the stressful situation (Carroll, 2013). In using problem-focused coping strategies, the health worker may start by identifying the problem, developing different solutions, comparing the advantages and disadvantages of different solutions, choosing a solution, developing a plan, and implementing the plan (Stephenson, King, & DeLongis, 2016). Active or problem-focused coping strategies are very helpful ways of coping with occupational exposure to HIV in which health workers seek first aid treatment, report the incident, test the source, adhere to the PEP, follow-ups and seek more knowledge after the occupational exposure (Jeong et al., 2016). Studies indicated that health workers occupationally exposed to HIV immediately, made sure that the source of exposure is tested for its HIV status (Cowan & Macklin, 2012; Daley & DeMarco, 2010). This is seen as an active coping strategy and if the HIV status turns out to be negative, then their fear of being infected with HIV is relieved (Cowan & Macklin, 2012). Health workers exposed to HIV occupationally may cope by researching for information about occupational exposure to HIV and HIV/AIDS cause, manifestation, and prevention (Folkman, 2010; Jeong et al., 2016). Health workers occupationally exposed to HIV may cope by seeking help from authorities to get tested for HIV, PEP treatment, counselling, and follow-ups but others may seek help from their spiritual leaders (Ward, Clark, & Heidrich, 2009). The individual who is unable to effectively use the problem-focused coping strategies turns to use more of the maladaptive coping strategies (Frydenberg & Lewis, 2009).
Emotion-focused or passive coping comprises all the regulative ways to reduce the emotional effects of stressful situations (Schoenmakers, van Tilburg, & Fokkema, 2015). Health workers occupationally exposed to HIV use emotion-focused or passive coping strategies such as crying, denial, avoidance, positive cognitive appraisal, reassurance, blaming, praying and diversional activities (Hirsch et al., 2015; Jeong et al., 2016; Ziady, 2008). Other emotion-focused or passive coping strategies are distancing, wishful thinking (Stephenson et al., 2016) shouting, singing, dancing, crying, shopping, comedies (Redhwan, Sami, Karim, Chan, & Zaleha, 2009), exercising, eating, smoking, drinking alcohol, displacement, and socializing with significant others (Chan, Leung, & Yu, 2012). Crying has a self-soothing and a mood-enhancing effect on individuals experiencing stress (Gračanin, Bylsma, & Vingerhoets, 2014). Praying is widely used as emotion-focused or passive coping mechanism to deal psychologically with stress (Levine, 2008; Salaree, Zareiyan, Ebadi, & Salaree, 2014). Health workers use prayer to God as a form of coping to relieve the stress of being occupationally exposed to HIV (Jeong et al., 2016). Both health workers and significant others of the health workers use prayer as a coping strategy to relieve stress developed from the occupational exposure to HIV (Aristotelis et al., 2015).

Other types of coping strategies are the meaning-focused (Folkman, 2010) and the relationship-focused coping strategies (Stephenson et al., 2016). Meaning-focused coping strategies are appraisal-based coping whereby the health workers occupationally exposed to HIV rely on values, and beliefs, with the aim to encourage and sustain coping (Schoenmakers et al., 2015). Relationship-focused coping includes support provision, empathic responding, and attempting to resolve differences (O’Brien, DeLongis, Pomaki, Puterman, & Zwicker, 2009). Hence, health workers cope well when friends, family and co-workers are compassionate, caring, being present with them and validating their experiences (Daley & DeMarco, 2010; Hirsch et al., 2015; Jaybhaye et al., 2014; Aristotelis
et al., 2015; Kumakech et al., 2011; Lin et al., 2008; Padilha & Villarinho, 2015; Ziady, 2008).

All these types of coping strategies often work together, such that emotion-focused coping strategies will allow the individual to focus on making a decision as in problem-focused coping strategies, which leads to a review of basic beliefs and aims as in meaning-focused coping strategies.

2.7 Summary of the Literature Review

The literature revealed that there are various causes of occupational exposure of health workers to HIV, with most being preventable. Health workers occupationally exposed to HIV are faced with a number of challenges. The health workers occupationally exposed to HIV experience a range of effect on the life of the affected health workers. These health workers occupationally exposed to HIV, use different coping strategies to deal with the stress. A significant amount of the literature seemed to come from countries outside of Africa with very little coming from Ghana. Most of the literature on occupational exposure is related to prevention of occupational exposure and post-exposure prophylaxis. Most of the studies relating to occupational exposure to HIV in Ghana were also more of a quantitative study with very few qualitative studies. Also, most of the studies in Ghana about occupational exposure to HIV focused more on HIV post-exposure prophylaxis.

In this current study, information about occupational exposure of health workers to HIV and how they cope are provided. Occupational exposure to HIV and coping by health workers were explored and described. In the next chapter, detailed descriptions of the research methodology are discussed.
CHAPTER THREE

METHODS

3.1 Introduction

This chapter describes and explains the research methods which were used to conduct the study. These research methods included the research design, the study setting, target population, the sampling size, sampling techniques, pre-test of data collection tool, data management, and data analysis. This chapter also discusses the methods that were used to ensure trustworthiness that is methodological rigour and the ethical considerations.

3.2 Research Design

The study used an exploratory descriptive qualitative research design to explore and describe the occupational exposure to HIV and how health workers cope with it. Qualitative research is the investigation and understanding of human social life phenomena in their natural settings using holistic methodologies rather than manipulation and control through text and image data (Creswell, 2014; Polit, Beck & Hungler, 2014). The exploratory descriptive qualitative design is aimed at exploring and describing topics of interest and tends not to belong to a specific qualitative methodology or design (Grove, Burns, & Gray, 2013). The exploratory descriptive qualitative design is used to explore and describe health workers experiences with occupational exposure to HIV and how they coped with it (Mayan, 2009). It is also used when limited research has been done on a topic (Grove & Gray, 2018). The exploratory descriptive qualitative design was appropriate because it seems that there are limited studies that have been done on exploring occupational exposure to HIV and coping with it by health workers in Ghana (Creswell, 2014; Polit, Beck & Hungler, 2014). The exploratory descriptive qualitative study was also appropriate for this study because it provided data and understanding into occupational exposure to HIV and how health workers cope with it in the Korle Bu Teaching Hospital, Ghana (Grove, Gray, & Burns, 2015).
3.3 Research Setting

Research setting is the very precise place where research information is collected (Polit, Beck & Hungler, 2014). The study took place at the Korle Bu Teaching Hospital which is located at Korle Bu, Guggisberg Ave, Accra. Korle Bu Teaching Hospital has fifteen departments and centres. These departments and centres are Surgery Department, Medicine Department, Obstetrics and Gynaecology Department, Child Health Department, Radiology Department, Accident centre, Anaesthesia Department, Psychiatry Department, Central Laboratory Service Department, Polyclinic, Dietherapy Department, Physiotherapy Department, Cardiothoracic centre, Radiotherapy centre and Plastics and Burns centre.

According to the Ministry of Health Ghana, (2018), Korle Bu Teaching Hospital is the leading referral tertiary health facility in Ghana. It is considered the third largest hospital in Africa with a bed capacity of about 2000 beds. It was estimated that an average of one thousand five hundred (1500) patients attend the hospital daily with about two hundred and fifty (250) admissions daily. It also serves patients from neighbouring countries such as Togo, Burkina Faso, and Nigeria. It also serves as the clinical training centre for the University of Ghana Medical School, the University of Ghana Allied Health Schools and the various Nursing and Midwifery Schools in Ghana. There are about four thousand nine hundred and sixty (4,960) staff with three thousand one hundred and seventy (3,170) of the staff being clinical health workers at the Korle Bu Teaching Hospital (Korle Bu Teaching Hospital, 2016). The staff consists of doctors, nurses, pharmacists, bio-medical scientists, health assistants, psychologists, radiologists, administrators, cleaners, physiotherapists, and security personnel with the nursing staff forming the majority of the workers.

The health workers in Korle Bu Teaching Hospital were chosen because a study found that 260 health workers have received HIV post-exposure prophylaxis after an HIV occupational exposure to HIV just between the year 2005 to 2010 (Tetteh et al., 2013). Korle Bu Teaching
Hospital was the first to start administering antiretroviral therapy in December 2003 in Ghana (Dako-Gyeke, Snow, & Yawson, 2012). These made Korle Bu Teaching Hospital an appropriate research setting for this study on health workers occupationally exposed to HIV and how they coped with it. The medical, surgical, accident centre, child health, obstetrics and gynaecology and the central laboratory service department were the specific departments used for the study at the Korle Bu Teaching Hospital.

The next section looks at the data collection methods.

3.4 Target Population

The target population is the group of individuals that the researcher is interested in studying (Creswell, 2014). The target population for this study was the health workers from the Korle Bu Teaching Hospital who had ever had occupational exposure to HIV. These health workers were nurses, midwives, doctors, laboratory personnel, enrolled nurses and health assistants who had ever been exposed to HIV occupationally.

3.4.1 Inclusion Criteria

The study included both male and female health workers from the Korle Bu Teaching Hospital who had ever been occupationally exposed to HIV. These health workers were nurses, midwives, doctors, laboratory personnel, enrolled nurses and health assistant. Participants who had been exposed to HIV whilsts working within a period of six months or more were included in the study. The inclusion criterion of six months or more after the occupational exposure was used because that was when the follow-up serological HIV tests were completed to ensure none of the participants had acquired the HIV infection (National AIDS/STI Control Programme, 2016). Only participants who had not acquired the HIV infection as a result of the occupational exposure to HIV were included in this study. This is because HIV positive participants may be still coping with the HIV infection and will be
more concerned with the experience of being infected with HIV. Participants were included in the study if they were able to fluently speak in “Fante”, “Twi” (local languages) or English which are the languages the researcher could speak fluently. The participant should be prepared to sign an informed consent to be part of the study.

3.4.2 Exclusion Criteria

Health workers who do not satisfy any of the inclusion criteria were not included in the study. Health workers who were infected with the HIV after the occupational exposure to HIV were not included in the study.

3.5 Sample Size and Sampling Technique

The study used the purposive and snowballing sampling methods. The purposive sampling technique was used because a specific group of health workers who have lived experiences of being occupationally exposed to HIV needed to be selected and there was also a need to select participants who could articulate themselves well to provide rich information about their experiences and coping strategies after occupational exposure to HIV (Polit, Beck & Hungler, 2014). The snowball sampling method was used because the study population is perceived to be stigmatized (Mill et al., 2014) and difficult to identify because some health workers avoid reporting the incidence of occupational HIV exposure (Nouetchognou et al., 2016). The purposive approach was used to enable the selection of participants who had specific knowledge and experience on the occupational exposure to HIV and coping with it (Marshall & Rossman, 2014). The sampling technique also allowed only participants who met the inclusion criteria to be recruited to provide the rich information on their experiences on occupational exposure to HIV and coping.

There is no rule for the sample size of a qualitative study, but rather the sample size depends on saturation (Loiselle, Profetto-McGrath, Polit, & Beck, 2011; Polit, Beck, & Hungler,
Saturation occurs when themes and categories in the data or information collected from the participants become monotonous and redundant, in a way that no fresh relevant information can be gotten by further information gathering (Loiselle et al., 2011). The study used a sample size of twelve (12) participates which was when data saturation from the interview was achieved (Guest, Bunce, & Johnson, 2006).

The researcher obtained a formal permission from the Korle-Bu Teaching Hospital. A copy of the ethical clearance letter from the Institutional Review Board of the Noguchi Memorial Institute for Medical Research of University of Ghana was used to obtain approval from the Korle Bu Teaching Hospital’s Institutional Review Board. The health workers in the various departments who met the inclusion criteria were identified and recruited. The researcher was responsible for the recruitment of participants, with the help of other participants and other staff members of the various departments. The researcher met and interacted with the staff who were helping with the recruitment to brief them on the objectives of the study, the inclusion and exclusion criteria and also gave them the information sheet which contained all the necessary information on the study before recruitment began. Help from other participants was also sought to recruit potential participants that they knew and were willing to take part in the study. The contact numbers of the researcher were given to the staff and participants helping in the recruitment for them to inform the researcher whenever a potential participant was identified. Potential participants were screened by the researcher to ensure they met all the criteria to be part of the study. The researcher then met the potential participants who expressed interest at a mutually convenient time and place. The consent form was completed after all the information about the study was explained to the potential participant and then the interview was conducted.
3.6 Pre-testing of Data Collection Tool and Procedure

Piloting was conducted to pre-test the interview guide and to determine if the equipment required for the interview, such as the tape recorder effectively worked (Gerrish & Lancey, 2010). The piloting used two participants at the LEKMA hospital in Teshie, Accra. Modifications were made on the interview guide after the pilot study to ensure the questions and wording were appropriate and comprehensible. The data that were gathered from the pilot study were not included in the research findings, however, the outcome was taken into account before the beginning of the actual research. The researcher used this pilot study to also rehearse on how to explain the study to the participants, complete informed consent procedures, conduct interviews and use the tape recorder.

3.7 Data Collection Tool and Procedure

The data was collected from March to April, 2018. The researcher used the interviewing as the main data collecting tool. A semi-structured interview guide (see Appendix C) was used, with follow-up questions. The semi-structured interview guide was needed to help ensure that all question areas were covered by the end of the interview (Loiselle et al., 2011).

The interview guide consisted of the demographic information and open-ended questions that were developed based on the objectives set for the research. The first section of the interview guide was the demographic information which helped obtain information on demographic characteristics of the participants such as age, marital status, gender, number of children, educational level, religion (with denomination), profession, number of years in the service, position in the institution, ethnic group, place of residence, number of occupational HIV exposure, and duration of last occupational exposure. The second section was the guiding questions which had open-ended questions probing into the cause, effects, challenges, and coping strategies used by health workers after the occupational exposure to HIV.
Other data collection tools used were the field notes and the tape recorder. Field notes were kept by writing all observations that were made during interviews in a notebook. The field notes included observations such as the gestures, temperament and general appearance of the participants during the interview. Also, the field notes included documentation of the researcher’s reflection of thoughts, feelings, ideas, moments of confusion, biases, and interpretations during the interview (Tracy, 2010). A tape recorder was also used with the informed consent of the participant to record all the interview for transcription and data analysis.

On the day of the interview, an informed consent was obtained before commencing the interview. The participants were made comfortable by providing a comfortable chair, a private room, well-lit room, well-ventilated room and a quiet environment. All the interviews were conducted at the time and place requested by the participants. A face-to-face interview was conducted with each participant to obtain the needed data by creating a chance for the participants to be able to voice out their feelings and thoughts in their own words (Creswell, Hanson, Clark, & Morales, 2007). The participants were made to relax by establishing rapport with them before the interview and while collecting the basic demographical information, by engaging in conversations in order to get to know each other in an informal way. The researcher established rapport with the participants to allay anxiety and also gained their cooperation which permitted them to share their experiences freely on occupational exposure to HIV.

The researcher began the interview with open-ended question, “Tell me about your experiences on occupational exposure to HIV”. This open-ended question opened up discussions and permitted participants to feel comfortable at start the interview (Mayan, 2009). The participants were allowed to freely ask questions and appropriate responses were promptly given. All unclear answers from the participants were also clarified when
necessary by requesting for follow-up information during the interview. The researcher also probed to explore participants’ experiences and perceptions about occupational exposure to HIV and coping.

During the interview, field notes were taken about the participants’ gestures, temperament, general appearance and the researcher’s reflection of thoughts, feelings, ideas, moments of confusion, biases, and interpretations (Tracy, 2010). These field notes helped the researcher to keep track of ideas for later exploration. A tape recorder was also used with the informed consent of the participant to record all the interview for verbatim transcription and analysis of the transcribed data. All the interviews were done in the English language because all the participants preferred to speak English. Each interview lasted for 30 to 45 minutes (Jamshed, 2014).

As the simultaneous data collection and analysis proceeded, the researcher learned more about the participants’ experiences with occupational exposure to HIV. This resulted in the evolution of questions and the issues to concentrate on rather than the initial ideas of the study (Grove et al., 2015).

3.8 Data Management

The interviews were recorded with an audio-tape and the observations made on participants were recorded as part of the field notes to complement the audio-recording of the interview. Participants were assigned pseudo codes for identification purposes in order to reduce the risk of making associations with them. Therefore, the individual interviews were labelled from OC1 to OC12 as it was recorded. Data collected were transcribed verbatim as soon as possible before the next interview to ensure improvement in the line of questioning in the subsequent interviews. The audiotape was replayed several times to ensure correct transcription and to reduce errors and omissions as much as possible. Each transcription was
kept as a different file and put in a folder with special identification. The transcribed recording was kept in a file cabinet that is accessible to just the researcher and supervisors. The researcher kept the interview material under lock and key for safekeeping. The data is intended to be kept for about five years after the study and thereafter destroyed according to the Institutional Review Board’s regulation. Demographic data of respondents were separated from the interview data and care was taken to ensure that no linkages were established between them. The electronic copies of the interview transcriptions were saved in a folder on a password protected computer hard drive to ensure that data was secure and safe.

### 3.9 Data Analysis

The data obtained from the interview were analysed using content analysis (Polit et al., 2014). Content analysis identifies, analyses and reports patterns within data collected (Creswell, 2014). The Miles and Huberman (1994) approach to qualitative content analysis was used in analysing the data gathered. This approach comprises of information reduction, information display, drawing of conclusion and authentication of information.

The researcher started the data analysis by concurrently collecting and analysing the data to ensure that any needed modification to the interview guide is done to improve the quality of the information collected. The researcher ensured that there was adequate time between individual interview sessions to allow simultaneous data collection and analysis, so as to adhere to the principle of inductive investigation. The researcher did not schedule any interview until the previously recorded interviews were transcribed and coded. The data that were collected were transcribed verbatim.

A method of summarizing, coding and categorizing was used to ensure data reduction. The data reduction was done by choosing, concentrating, simplifying, conceptualizing and
converging the interview data into themes. Data reduction started when the researcher got acquainted with the data by reading it several times. The researcher looked for similar ideas, thoughts and words within the data as it was read over and over again. Codes were assigned to these similar ideas and words. Codes that were similar were congregated to form themes and related sub-themes were gathered to generate categories. All the categories that were recognised were coded with subheadings and kept in their respective file. All the transcription information was handled in the similar manner and new themes or categories that developed during the process were added to the file until every transcribed script was examined. During the analysis, the relationship between the themes and categories were analysed and assembled into main categories. Identified codes were written in margins that were created against corresponding lines of the transcribed interview script where the theme or codes were found.

After the data reduction, the researcher gained more understanding of the data which led to the drawing of a table to display the data that had been reduced. The conclusion was drawn from the reduced data to ensure that the data collected made sense or were understood and were meaningful. Finally, the verification of the data was done by revisiting the data as many times as necessary to cross-check the conclusions and also the data was also reviewed by supervisors and peers to come to a consensus about the conclusion.

3.10 Methodological Rigour (Trustworthiness)

Rigour refers to the strict process of information gathering and analysis as well as the reflection of the entire quality of a qualitative research (Polit et al., 2014). Parahoo, (2014) admits that even though rigour can be challenging to determine in the qualitative investigation, the researcher wants his results to reflect truly the phenomenon being studied and to add to the knowledge that is beneficial to others. Lincoln and Guba (1985) framework were used by the researcher to ensure the trustworthiness of this research. The framework
used consisted of the credibility, dependability, confirmability, and transferability which increased the trustworthiness of this qualitative research and the same as validity and reliability of a study (Lincoln, & Guba, 1985). Trustworthiness was demonstrated through methodological strategies such as audit trail, critique, member checking, triangulation, peer debriefing, negative case analysis, detailed methodological description and explicit consideration of researcher biases to ensure rigour in qualitative studies (Moon, Brewer, Januchowski-Hartley, Adams, & Blackman, 2016).

Credibility refers to the degree to which the study represents the real meaning of the research respondent or true nature of the data collected from the participant (Lincoln & Guba, 1985). It ensures that a research measures what it really intended to measure (Kennedy-clark, 2012). To ensure credibility, the researcher established a good relationship with the participants by going to the selected setting prior to information gathering to establish rapport with all the participants. In order to attain credibility, the researcher ensured that participants recruited met the inclusion and exclusion criteria and provided detailed data on their experiences after the occupational exposure to HIV (Streubert & Carpenter, 2011). Some of the questions with answers that are not detailed or deficient were asked in different way and probed furthermore to produce detailed information from participants. Through the process of member checking the analysed and interpreted data were sent back to the participants to verify as true or suggest changes to any misreporting or misinterpreted information to ensure credibility (Anney, 2014). Enough time was allocated to collect the data on the field and adequate time (an average of four days) was allocated to transcribing and analysing each interview before the next interview was conducted to ensure credibility. The researcher and the supervisors all coded the data separately and the codes were compared to reduce differences and ensure it represents what the participants meant. Also,
to ensure credibility the researcher took field notes on the behaviour of the participants, as well as the feelings and thoughts of the researcher.

Dependability is concerned with the ability of the information to remain constant over time, should the research findings be replicated if done under similar conditions such as using similar participants in a similar setting (Elo et al., 2014). In an effort to ensure dependability the researcher adapted strategies such as audit trail, code-recode, peer examination and stepwise replication were used (Anney, 2014). The researcher maintained an audit trail by tracing and recording any decisions which can influence the research so that a different independent person can examine the information such as the recorded interviews, transcriptions, and field notes (Streubert & Carpenter, 2011). Also, “code-recode” was done by coding the same data twice with one week separating the recording and then the two codes were compared to check if the result varies or are the same. Peer examination was ensured by discussing the procedures and the findings of the study with qualitative research expert that was neutral to ensure dependability. The stepwise replication was also used by having the supervisor and the researcher compare their independently analysed data to check and resolve any differences to ensure dependability.

Confirmability is the degree to which the research findings can be verified by other researchers and shows that data and interpretations of the findings are not made up by the researcher, but clearly resulting from the data collected (Lincoln & Guba, 1985). In order to ensure confirmability, the researcher kept a reflexive journal (field notes) to record all field activates and personal reflection about the study to assess the biases from the researcher that possibly affected the study (Anney, 2014). These biases were avoided in the study by including data from participants with a diverging view from the mainstream data, using open-ended questions, avoiding leading questions, and avoided inducing participants with gifts (Polit & Beck 2013). In order to ensure confirmability, an audit trail of all records about
the study was maintained or kept to serve as evidence that the research was actually conducted.

Transferability is a form of external validity, which describes the degree to which the findings in a research are applicable to practice, theory, and future research (Lincoln, & Guba, 1985). The degree to which the findings from a study can be applied to another study (Kennedy-clark, 2012). It involves the degree to which the results of a qualitative research can be beneficial to similar groups or circumstances (Parahoo 2014). In order to ensure transferability, the researcher ensured that strategies such as providing a thick description and purposeful sampling were put in place. Providing a thick description was ensured by explaining all the processes or steps in the study to make sure that the study can be replicated under similar conditions in other places (Anney, 2014). The researcher also used the purposive sampling method to help concentrate on the key informants who had relevant information about occupational exposure to HIV and this ensured greater in-depth findings.

3.11 Ethical Considerations

Ethics involve a system of moral values relating to the degree to which investigation processes follow professional, legal and social responsibilities to the participants in the study (Loiselle et al., 2011). All efforts were made to ensure that ethical considerations were strictly adhered to at all times before, during and after the study. The researcher ensured the protection of all participants and conducted the study in an ethical manner. The researcher, safeguarded the welfare and safety of the participants at all times during the study. Ethical considerations such as obtaining ethical clearance, obtaining inform consent, preventing possible harm to participant, providing all the benefits of the study to the participants, informing the participant of all their rights, maintaining confidentiality, and ensuring privacy were ensured during the study.
An introductory letter from the school of Nursing and Midwifery, University of Ghana and copies of the research proposal were sent to the Institutional Review Board of the Noguchi Memorial Institute for Medical Research and the Korle Bu Teaching Hospital for ethical clearance and were approved before data collection. All the ethical concerns raised by these institutional review boards were responded to and where necessary corrections were made to ensure those ethical concerns were addressed. These ethical approval letters were part of the information given to all the participants to read before signing the consent forms.

Participants were given clear information concerning the study and the choice to consent or reject participation voluntarily (Polit & Beck, 2011). The information that was given to the participants before signing the consent form was the title of the study, objectives of the study, significance of the study, ethical approval letters, possible harm and benefits of the study to the participants, mitigating efforts against any harm to the participants, and data collection and management procedures. Informed consent was sought from each participant after they had understood the information given to them. All the participants were given an approved informed consent to read and sign before starting with the data collection. The participants were made to know that they could withdraw their consent at any point in time during the study without any consequences.

Privacy of all participants and the confidentiality of all information acquired from the participants were maintained throughout the study. Privacy of participants and confidentiality of information were ensured throughout the research by assigning code names to the participants, restricting access to anybody during the interview sessions, and avoiding the use of names during the interview sessions. Encryption data technologies were used to safeguard electronic information in ensuring the policy of good research practice (Stake, 2010). All the data collected were stored in a file cabinet under lock and key with access restricted to only the researcher and supervisors.
All participants did not directly benefit from the study but their experience shared would help improve the quality of life for health workers occupationally exposed to HIV. In order to prevent harm in this study, participants were observed for any signs of psychological distress such as crying or anger so as to immediately stop the interview and refer to a clinical psychologist who was on standby to intervene. The study recorded no harm to any participant.

In the next chapter, the findings of this study are presented.
CHAPTER FOUR

FINDINGS OF THE STUDY

4.1 Introduction

This chapter describes the findings of the data gathered from all the twelve participants of
the study on their experiences of being occupationally exposed to HIV and coping strategies
used. Both common and unique experiences of participants were presented in the findings.
Using content analysis, four (4) main themes with their corresponding sub-themes were
identified from the interview data. The main themes and their sub-themes are presented with
verbatim quotations from the participants using their pseudo code names. The demographic
data of the participants in the study and the main themes with their sub-theme are presented
in the following sections.

4.2 Demographic Data of the Participants

Participants’ ages ranged from twenty-five (25) years to fifty-seven (57) years. The females
formed the majority of the participants, with a number of ten (10) females out of twelve (12)
participants. The male participants were only two (2) in number. All the participants live in
the Greater Accra region. All the participants were Ghanaians. The participants were from
various tribes in Ghana. Five of the participants were from the Akan tribes of “Ashanti”,
“Fanti”, “Akuapem” and “Ahanta”. Four were from tribes in the northern part of Ghana
such as “Gonja”, “Dagomba”, “Komkomba”, and “Dagaati”. Three of the participants were
from the “Ga”, “Ga-Dangme”, and “Ewe” tribes. Out of the twelve (12) participants, eight
(8) were married, three (3) were single and one (1) was divorced. Three out of the twelve
participants did not have any children and nine of the participants had children. All the
participants in the study were health workers. Eight out of the twelve participants were
nurses, forming the majority of the participants. The rest of the participants were one
midwife, one doctor, one health assistant and one bio-medical scientist. Ten of the
participants had tertiary level of education and two participants had post-secondary education. All the participants spoke English and at least two local Ghanaian languages such as Ga, Fanti, Twi, Ewe, Dagomba, Gonja, Dagaati, Ahanta, Komkomba, and Hausa. Ten of the participants were from various Christian churches such as the Catholic, Pentecost, Lighthouse, Methodist and Evangelical Presbyterian church. Only two of the participants were from the Muslim faith. The last time participants were occupationally exposed to HIV ranged from the year 2012 to 2017. The number of years of service in the health sector by the participants ranged from two (2) years to eight (8) years, with only one participant having served for thirty-five (35) years. All the participants had been exposed occupationally to HIV at least once. Seven of the participants indicated that they had occupationally been exposed to HIV only once, with four participants being exposed twice. Only one participant who was a medical officer reported that he had been exposed occupationally to HIV for eight (8) times. (See Appendix E: Summary of demographic characteristics of participants).

The rest of this chapter focuses on the main themes and their sub-themes derived from the interview data. The reporting and grouping of the findings into the main themes and their sub-themes were backed by verbatim quotes from the transcriptions of the participants’ interviews. Information from the interviews led to the generation of four (4) main themes and fourteen (14) sub-themes. The main themes and their sub-themes identified in the data are shown in Table 1.
Table 1: Main Themes and Sub-Themes from Transcribed Interview Data

<table>
<thead>
<tr>
<th>MAIN THEME</th>
<th>SUB-THEME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Causes of occupational HIV exposure</td>
<td>• Sharp injury</td>
</tr>
<tr>
<td></td>
<td>• Direct contact with bodily fluids</td>
</tr>
<tr>
<td>2. Challenges to health workers.</td>
<td>• Side effects of post-exposure prophylaxis.</td>
</tr>
<tr>
<td></td>
<td>• Systemic care lapses after exposure.</td>
</tr>
<tr>
<td></td>
<td>• Inadequate social support from the workplace.</td>
</tr>
<tr>
<td>3. The effects of occupational HIV exposure on health workers’ lives.</td>
<td>• The physical effects.</td>
</tr>
<tr>
<td></td>
<td>• The emotional effects.</td>
</tr>
<tr>
<td></td>
<td>• Social effects.</td>
</tr>
<tr>
<td></td>
<td>• Increase sense of caution.</td>
</tr>
<tr>
<td></td>
<td>• Empathy for people living with HIV.</td>
</tr>
<tr>
<td>4. Coping strategies.</td>
<td>• Praying for a good outcome.</td>
</tr>
<tr>
<td></td>
<td>• Seeking a solution.</td>
</tr>
<tr>
<td></td>
<td>• Emotional coping.</td>
</tr>
<tr>
<td></td>
<td>• Social support.</td>
</tr>
</tbody>
</table>

In an effort to provide a response to the research question: “What is the perceived cause of the occupational exposure to HIV?”, a theme emerged namely; “Causes of occupational HIV exposure” with its related sub-themes. These are presented in the subsequent paragraphs.

**4.3. Causes of Occupational HIV Exposure**

This theme identifies the main causes of occupational exposure to HIV among health workers. The causes of occupational HIV exposure were reportedly sharp injuries and direct contact with bodily fluids. Most of the participants were occupationally exposed to the HIV through sharp injuries such as needle pricks and cuts from blades. Only one participant experienced amniotic fluid splash on the skin out of the 12 participants. These causes were associated with participants poorly adhering to infection prevention and sharp safety standards. These causes of occupational exposure could be blamed on the participants themselves, other staff, or both. One participant blamed the patient for the occupational HIV
exposure. Most of the causes that led to the occupational exposure to the HIV were preventable. The wrongful disposal of sharps led to health workers being pricked or injured by used sharps resulting in occupational exposure to HIV. Recapping of needles with both hands was also associated with the occupational HIV exposure. The direct contact with bodily fluids was as a result of non-use of protective clothing which caused the occupational exposure to the HIV. Two (2) sub-themes were identified under the main theme of “Causes of occupational HIV exposure”. These sub-themes were “sharp injury” and “direct contact with bodily fluids”. These are described with verbatim quotes from the data collected.

4.3.1 Sharp Injury

Sharp injury was one of the most common causes of occupational exposure to HIV in this study. The sharp injuries experienced by participants consisted of mostly needle stick injury and a few blade cuts. Some of the participants were occupationally exposed to HIV by needle stick injury, blade cut through improper disposal of sharps and during the unexpected movement of the patient whiles injecting the medication. Other needle stick injuries were through the recapping of used needles with both hands.

Some participants reported that the practice of recapping used needles with both hands during and after procedures such as drawing blood with a needle and intravenous cannulation can easily cause occupational exposure to HIV. In relation to recapping of used needles leading to occupational exposure to HIV, a participant had this to say:

“It was when I happened to set a line for one client like that and after setting the line. You know for me to cork the needle then mistakenly the needle has pricked me” (OC1).

Another participant stated:

“I had drawn the blood and everything, but when it came to the capping of the needle then it sticks me through the glove. I was capping with both hands” (OC7).
Based on what the participants were saying, it appeared that recapping used needles with both hands could lead to needle stick injuries which result in occupational exposure to HIV. The recapping could cause occupational exposure to HIV because in the attempt to recap the used needle, it is possible for the needle to miss going into the needle cap and mistakenly result in a needle prick.

Other participants reported that they had the occupational exposure to HIV because sharps such as needles and blades were improperly disposed of at the wrong place. Some of the wrong disposals of sharps were disposing into non-puncture resistant containers, containers with supplies stored in them and openly in the working environment. In relation to the improper disposal of sharps such as needles and blades, a participant recounted her experience by saying:

“I picked some waste, waste to the dustbin and that was where I got the prick. They are supposed to put the sharps in their sharp box but they didn’t put it in the sharp box but rather in the dustbin lining. It was in the line that innocently, I didn't know that there was something of that sort” (OC5).

Looking at what the participant expressed, improper disposal of sharps in a non-puncture resistant container and into the general dustbin led to the needle prick as the needle could puncture through to cause needle prick. The participant also blamed other staff for wrongfully disposing of the sharps in the general dustbin which did not have a puncture resistant dustbin lining.

Similarly, another participant also described the way she got pricked by a needle due to improper disposal of sharps. The participant stated:

“Instead of using the sharp box, they rather dropped it (used needle) in the box where we keep the penicillin bottles and me too, I had to go for the bottle and wash for a sample that was why I got exposed” (OC4).

The statement from this participant means that improperly disposing of used sharps in containers used for storage of supplies can easily lead to sharp injuries which result in
occupational exposure to HIV. The participant also did not expect used sharps to be disposed of in that container which made it easy to be pricked. She blamed other staff for the cause of the occupational exposure to HIV.

In another case, a participant described the sharp injury incident caused by improper disposal of sharps by saying:

“I was trying to pass a line for the patient. So, when I had, it “tissued” (the needle misses the veins whiles trying to enter the veins). So, I have to remove the cannula and try another one. So, when I remove it, I placed the needle on the bed. So mistakenly before I realized I had the prick from the same cannula” (OC2).

A participant with a similar sharp injury incident also stated:

“I shaved the scalp (of the patient) and left the blade on the bed thinking I may use it again. Unintentionally ended up putting a paper on the blade. So, in an attempt to pick the paper and discard the bleach cut me” (OC6).

The description given by these two participants show that the occupational exposure to HIV occurred because used sharps such as needles and blades were improperly disposed of openly in the working environment such as on a patient’s bed and in the tray by the participants themselves. It also occurred because the sharps were obscured from the view of the participants.

Another cause of sharp injury resulting in occupational exposure to HIV was through the unexpected movement of the patient whiles injecting the medication. A participant stated:

“I was given an insulin to a patient, a sub-cut administration of course. And the man himself which is the patient himself knows that he is HIV patient and he just moved his hand and then the needle just picked my thumb” (OC10).

The participant seemed to imply from the statement that the sudden movement of the patient resulted in the needle prick and blamed the patient for the cause of the occupational exposure. The participant also felt that the patient should have kept still during the injection to prevent the needle injury.
4.3.2 Direct Contact with Bodily Fluids

Direct contact with bodily fluids was another cause of occupational exposure to HIV. A participant was occupationally exposed to HIV through direct contact with the amniotic fluid (bodily fluid). The participant had this to say:

“*I was at maternity and the person was delivering. I was an assistant. So, she ruptured and she was HIV positive patient. So, I got soaked with the liquor (amniotic fluid). I changed my indoor and I went back to work*” (OC11).

Based on what the participant said, it seemed that she was not wearing the recommended protective clothing such as face shield, boots, and plastic apron for delivery. This facilitated the direct contact with the amniotic fluid (bodily fluids) by soaking so much that she had to change her “indoor” (scrub uniform). The participant could have prevented the HIV exposure by the use of protective cloths, knowing that the client was HIV positive.

In the effort to answer the second research question: “What are the challenges faced by health workers who have been exposed to HIV at work?”, the theme; “Challenges to health workers” emerged, with it corresponding sub-themes. This main theme and its sub-themes have been presented in the following paragraphs.

4.4 Challenges to Health Workers

Challenges to health workers looked at the difficulties that health workers go through to cope with the HIV occupational exposure. Participants experienced challenges such as side effects of post-exposure prophylaxis drugs, systemic care lapses after exposure and inadequate social support. The side effects were so discomforting that some participants stopped taking the treatment. Some of the side effects were dizziness, vomiting, nausea, weakness, and diarrhoea. All the participants who took the post-exposure prophylaxis complained about these side effects. There are cases that, health workers were not tested, counselled and the post-exposure prophylaxis was not administered within the
recommended duration. In an instance, there was confusion about which medication to be administered. In another case, the participants did not report the exposure for assessment and possible care. These were considered as systemic care lapses after exposure to HIV. In some situations, the participants did not get reassured and motivated by co-workers and friends. The three (3) sub-themes identified were the side effects of post-exposure prophylaxis, systemic care lapses after exposure and inadequate social support. These sub-themes are described with verbatim quotations from the data.

4.4.1 Side Effects of Post Exposure Prophylaxis

Most of the participants who took the post-exposure prophylaxis treatment experienced side effects such as nausea, vomiting, diarrhoea, weakness, moodiness, anaemia, abdominal pains, weight gain and dizziness which resulted in some of the participants discontinuing the medication. The non-adherence to the post-exposure prophylaxis by participants was due to the discomfort from the side effects of the post-exposure prophylaxis. The side effects of the post-exposure prophylaxis were difficult to be relieved. These side effects affected the quality of life of participants. It also affected the activities of daily living for some participants.

Side effects of the post-exposure prophylaxis was a major challenge to health workers occupationally exposed to HIV. Some participants complained of experiencing side effects that were very uncomfortable to them. A participant said:

“Eei, as for the medication, hmm, it very, very, it makes you weak. It makes you like throwing up, like vomiting. You become moody” (OC4).

What this participant said seems to indicate that the side effects that she experienced made her feel like she was sick.
Similarly, another participant also said:

“I got anaemic as having anaemic symptoms. I was having diarrhoea and vomiting and a lot of abdominal symptoms, abdominal pain” (OC12).

This statement from the participant suggests that, side effects such as vomiting, diarrhoea, and pain made the participant feel uncomfortable and unwell. These discomforts and ill feeling had some negative effect on the quality of life of the participants.

The side effects of the post-exposure prophylaxis also had some effects on the activities of daily living of the participants. A participant described the impact of the side effects on the activities of daily living by saying:

“For some time, I lost appetites, lost weight and even weakness. I felt so weak can’t get out of bed, especially in the morning” (OC10).

Similarly, another participant also said:

“Well, the drugs I couldn’t complete it, truth to be said. Because it was making me feel like a pregnant woman. Nauseous, I couldn't do anything practically for myself” (OC3).

Based on what these participants said, it appeared that the side effects of the post-exposure prophylaxis hindered their ability to do some of the activities of daily living. This was because the side effects made them too weak to do things for themselves and even needed help from people to do those activities. The inability to perform the activities of daily living also affects the quality of life of the participants.

The effort to relieve the participants from the side effect was not effective as the side effects persisted. This participant had to endure the side effects without any relief. A participant lamented:

“It makes you like throwing up, like vomiting. Honestly, those taking those drugs, they are really trying, because it wasn't easy for me at all, it wasn't. So that is why I had to come back and report them, the drugs and they just keep saying I should keep taking it, so that they will prevent, if there should be something it will prevent it, to cleans the blood and all that, but I knew what I was going through” (OC4).
Upon what the participant said, it seems that the reassurance of the participant was not effective in addressing the side effects of the post-exposure prophylaxis. The participant still felt the discomfort of the side effects.

On the contrary, another participant had an improvement in the side effects of the post-exposure prophylaxis when the type of antiretroviral drugs was changed to different antiretroviral drugs. The participant explained by saying:

“They gave me one medication first that made me dizzy and the doctor later said they don’t give that one to healthcare professionals because of the side effects. So, he changed it and gave me another. I can’t remember the names of the medications but he changed one and gave another one that that one was better with the side effects” (OC6).

This participant’s statements mean that, changing the type of antiretroviral drugs to a different type led to less side effects which also increased the comfort of the participant. The reduction in the side effects and improvement in the level of comfort will led to adherence to the post-exposure prophylaxis treatment.

4.4.2 Systemic Care Lapses after Exposure

Some participants experienced lapses in their care at the health facility in the management of the post-exposure prophylaxis. A participant was not given the post-exposure prophylaxis (PEP) within the recommended 72 hours after the exposure and the source of exposure was also not tested for HIV.

Systemic care lapses were one of the challenges experienced by the participants after the occupational exposure to HIV. A participant narrated how systemic care lapses was a challenge for her care after the occupational HIV exposure, by saying:

“Immediately I came to look for the PEP schedule. So, I called the first person’s name I saw on the lists, a doctor. So, when I told him that I saw his name on the PEP schedule that was why I called him? He asked me what’s PEP is? So, I realized he was not knowledgeable about it. So, I went to the unit to look for them and they were there. Then they told me I needed to return; it was a Saturday. So, they said I needed to return on Monday for the
medications. But they didn’t talk about testing the patient or anything. So, we allowed the patient to go home that was what happened on the first day. So, on Monday, I went back to the unit before I saw the doctor in charge of the ART unit and he was saying they should have given me the medicine the same day to start and the patient should have been tested” (OC6).

Using the narration of this participant, it appeared that the Antiretroviral Unit that was to administer the PEP medication was closed on weekends and the doctor responsible for the prescription of the PEP medication was not aware of that responsibility. These resulted in the participant taking the post-exposure prophylaxis medication very late thereby reducing the effectiveness of the PEP. The source of the HIV exposure was also not tested for the participant to know the HIV status. These were the systemic care lapses that the participants faced as a challenge to getting care for the occupational HIV exposure.

Another challenge under the systemic care lapses was that the participants did not report the instances of occupational exposure to HIV for immediate care. Hence these incidences were not officially recorded and had no record of it in the hospital. A participant explained by saying:

“I was at maternity and the person was delivering. I was an assistant. So, she ruptured and she was HIV positive patient. So, I got soaked with the liquor. I didn’t do anything. I just prayed about it. I felt I didn't feel scared. So, I didn’t bother or maybe, well if somebody had told me to go forward fine because I was new. But I didn't do anything and I didn't feel bothered. I felt its part of the job” (OC3).

This participant’s explanation seems to suggest that she did not report the incident of HIV exposure because of inadequate knowledge on what to do after the exposure. She also did not feel or think it was a threat to her and therefore there was no need to report it. The midwife that she was assisting should have also insisted on the participant to report the HIV exposure. These were also challenges faced by a participant in relation to systemic care lapses.
Another case of systemic lapses was that there were inconsistencies in which type of PEP drugs should have been given. This systemic care lapse was noticed when a participant stated:

“The pharmacist at the ART who is the National Service personnel started me on the medication and then on Tuesday when I met the nurses, they told me the combination he gave me wasn't supposed to be so. So, they were arguing about that too for some time. They changed the medication and later when I finally met the doctor, the doctor too said the medication was supposed to be the initial one the pharmacist gave me. So, everything was inconsistent at the units” (OC6).

This narration from the participant seems to indicate that certain staff responsible for the post-exposure prophylaxis were not well trained on the post-exposure medication. All these systemic care lapses were challenges for the participant after the occupational HIV exposure since the best care was not given to her.

Another systemic care lapse was that the PEP staff did not follow up with the participants to ensure the participants were adhering to the PEP treatment. A participant complained that:

“Well, I was expecting that the hospital at least the ART staff would check on me because since then nobody has actually, ask me if I would come back and test again or how I felt about the drug, like nothing” (OC3).

Based on this statement from the participant, it appears that staff responsible for PEP were not effective at following up with the participants to ensure compliance with all the recommended care. This is a systemic care lapse that needs to be strengthened to ensure better care for the participants.

4.4.3 Inadequate Social Support from the Workplace

Inadequate social support from the workplace is another challenge that participants faced after the occupational exposure to HIV. A participant reported that after the HIV exposure
her co-worker blamed her for the incident rather than reassuring her as a way to support her.

The participant narrated this by saying:

“When I reported even when my D.D.N.S. got to know that I had the cuts. She complained instead of reassuring she said umm, you nurses, you don’t do your things well you see what has happened and everything like, everybody said at that point in time wasn’t encouraging” (OC6).

This complaint by the participant seeks to show that her co-workers were not supportive when she had the occupational exposure to HIV.

In an effort to answer the research question: “What is the effect of the occupational exposure to HIV on the lives of the affected health worker?”, a theme emerged namely: “The effect of occupational HIV exposure on health workers’ lives”. This is presented in the following paragraphs.

4.5 The Effect of Occupational HIV Exposure on Health Workers’ Lives

Participants experienced some effects from the occupational HIV exposure in their lives. Some of these effects were from the side effects of the post-exposure prophylaxis treatment such as diarrhoea, nausea, vomiting, weakness, dizziness, and moodiness. Other effects experienced by the participants were fear, anger, sadness, and guilt. Some participants developed social relationship issues with patients (source), friends and co-workers. Some, participants became more careful to avoid occupational exposure to HIV. Other participants expressed that they became more empathetic to people living with HIV after experiencing the occupational exposure to HIV. The sub-themes identified were the physical effects, emotional effects, social effects, increased sense of caution, and empathy for people living with HIV. These effects are described under the various sub-themes with verbatim quotations.
4.5.1 Physical Effects

The physical effects reported by the participants were side effects of the post-exposure prophylaxis treatment such as nausea, vomiting, diarrhoea, dizziness, weight loss, inability to sleep, skin rash, and general body weakness. The participants had to cope with the stress produced by the physical effects. The side effect of the PEP treatment resulted in some of the participants discontinuing the PEP treatments. These side effects had a very discomforting effect on the participants. It also negatively affected their quality of life.

A participant described the physical effect of the side effect of post-exposure prophylaxis by saying:

“I lost weight. Even my skin tone changed. My skin changed. I feel like, some small, small rashes on my skin. For some time, I lost appetite, lost weight and even weakness” (OC10).

Similarly, another participant stated:

“I got anaemic. I was having diarrhoea and vomiting and a lot of abdominal symptoms, abdominal pain” (OC8).

Another participant further stated:

“I had diarrhoea terrible ones on some days diarrhoea was like eight times even when I took water, I passed it. They gave me one medication first that made me dizzy” (OC6).

All these participants were saying that the side effects of the post-exposure prophylaxis had its effects on the body and it functions. These side effects also had a major effect on the structures and functions of the participants’ bodies. This also led to poor quality of life for the participants.

A participant who experienced the bad side effects of the post-exposure prophylaxis resulted in the discontinuation of the medication. This participant indicated that:
“Well, the drugs I couldn’t complete it, truth to be said. Because it was making me feel like a pregnant woman. Nauseous, I couldn’t do anything practically for myself” (OC3).

The statement from this participant means that the bad side effect was so terrible that she had to stop taking the post-exposure prophylaxis. The side effect of the PEP also affected physical activities such as activities of daily living.

In one case, a participant reported that, the side effects of the PEP reduced with time. A participant explained by saying:

“Yes, when I took the drugs at the beginning, I used to feel very nauseous and it was very uncomfortable. I was unable to sleep at night, yeah. And I experienced this within the first few weeks but after my body became used to it was fine” (OC7).

Based on what the participant said, it seems that with time the physical effect from the PEP did disappear to improve the physical well-being of the participant.

4.5.2 Emotional Effects

The emotional effects of occupational exposure to HIV experienced by participants consisted of sadness, fear, anxiety, scared, anger, and guilt. Most of these emotional effects were based on the chance of acquiring the HIV infection after the occupational exposure, although none of the participants reported that they were infected with HIV. A participant expressed the emotional stress experienced by saying:

“I was very scared. Hmm, I was very scared because when it happened what came to my mind was HIV/AIDS” (OC2).

In using what this participant said, it seemed that the participant’s thought of being infected with HIV was what caused her to be scared.

Another participant was also anxious after the occupational HIV exposure. The participant said:
“Eei, the anxiety was great because there I didn't know if truly, I am going to be infected with this deadly HIV and sometimes you know that HIV is not just the name but a stigma attached to it” (OC4).

Examining the statement from this participant, it seems that she was anxious because of the risk of getting the HIV infection and also the stigma attached to HIV.

Another participant experienced an array of emotional effects after the occupational HIV exposure. The participant narrated:

“The patient himself knows that he is HIV patient and he just moved his hand and then the needle just picked my thumb. So, I got sacred. I went back to the nurses’ restroom, started crying. I feel, I just feel like some kind of bitterness in me the moment I see him. Because he is very much aware that, he is an HIV patient. So, I was not angry with anybody but with the patient’s I was, I was very angry” (OC10).

Based on what the participant was saying, it appears that the participant had several emotional effects after the HIV exposure. The participant was scared, angry with the patient for causing the needle prick, and cried about the HIV exposure incident.

Another participant felt guilty after the occupational HIV exposure. The participant said:

“In, in a way. I thought if I had been more careful with the, especially with the blade, maybe I wouldn’t have been pricked by the blade, uh-huh. So, in a way, I was a bit guilty that maybe it’s my fault. I didn’t, I wasn’t much careful” (OC9).

The statement from the participant indicated that, she blamed herself for not taking precautions to prevent the HIV exposure.

Most of the participants had these emotional effects because they did not know whether they would have gotten infected with HIV or not after the HIV exposure. Hence these emotional effects disappeared the moment it was confirmed that the source of the exposure was HIV negative or it was confirmed that the participant did not get infected with the HIV.
4.5.3 Social Effects

The social effects look at the effect of the HIV occupational exposure on the relationship with family, friends, patients, and co-workers. The effect on the social relationships between the participants and other people such as patients, friends, patients, and co-workers deteriorated.

A participant had a deterioration in the relationship with some of her co-workers. The participant narrated:

“When my D.D.N.S. got to know that I had the cuts. She complained instead of reassuring she said umm, you nurses, you don’t do your things well you see what has happened and everything like, everybody said at that point in time wasn’t encouraging. Umm, my, her next in command also passed the comment that I should make sure I don’t get close to my husband. There was a lot of stigmas. Aha, the way they handled it there was no reassurance. So, I made up my mind that if ever there would be anything like that I wouldn’t let anybody know about it. Even if I will look for the care it would be in a different facility” (OC6).

Based on the participant’s narration, it seems that the participant felt the co-workers could have been more concerned for what she was going through rather than blame her and passing inappropriate comments about her not having sex with the husband. The participant felt that she was being stigmatized and that some of her co-workers were not helpful to her. Hence, the participant lost trust in her co-workers and felt that the co-workers did not have empathy for her. This led to the destruction of the cordial relationship she had with her co-workers.

Another participant also felt temporally abandoned by the boyfriend after he got to know she had been exposed to HIV occupationally. The participant narrated:

“So, I, I had a boyfriend. I told him about it then he runs away from you for months but that was it. He understood me that it’s an accident but he was also trying to protect himself. So, he wouldn’t come close to me. Even though he, he came to visit once in a while. Even though he came to visit once in a while like, we, we couldn't have that relationship for some time” (OC3).
Assessing the statement made by the participant, it appears that she felt her boyfriend abandoned her and that there were some changes in the relationship that she had with her boyfriend after the occupational HIV exposure. The participant felt that the occupational exposure to the HIV caused the deterioration in the relationship with her boyfriend.

In another case, the participant developed hatred for a patient whom she blamed for intentionally causing her to be exposed to HIV occupationally. The participant said:

“The moment I see the patient, I just feel like hitting him with something. I feel, I just feel like some kind of bitterness in me the moment I see him. Because he intentionally pulled himself. That was why I have that prick” (OC10).

Based on what the participant was saying, it seems that the participant felt that the patient wanted to infect her with HIV by intentionally causing the needle prick. This made her hate the patient to the extent that she wanted to harm the patient. Therefore, occupational exposure to HIV could lead to the destruction of cordial relationships between friends, family, co-workers and patients which may be difficult to repair.

4.5.4 Increase Sense of Caution

Increased sense of caution is a sub-theme that describe how the participants became extra careful with sharps and bodily fluids after the occupational exposure. Participants reported that they had realised that they were at risk of being exposed to HIV and hence needed to be cautious at all times to prevent another occupational HIV exposure because of their experience with the previous HIV occupational exposure. In relation to being cautious, a participant stated:

“I noticed that our work is so risky. It’s very risky and we should be very careful when doing a procedure on a patient because we wouldn’t know what the patient would have been infected with” (OC12).

Another participant also said:

“I would say it's, it's, not a good experience and then but it teaches us to be more careful when handling sharps and then needles and then coming into
contact with patients. We shouldn't take things for granted. Anything can happen at any time. Should be more careful” (OC9).

Similarly, another participant expressed her lesson learned by saying:

“So, I just learned to be careful since then and I can tell you since then I never experienced such thing and I hope I will not experience such a thing again” (OC1).

Based on what the participants were saying, it appears that they became more careful and took the universal precaution very seriously after the occupational exposure to HIV. It also seems to be a wakeup call for the participant to be more cautious with HIV exposures.

**4.5.5 Empathy for People Living with HIV**

This sub-theme can be explained as gaining the ability to understand and feel for others. Participants after experiencing HIV exposure felt that they now appreciate more how people living with HIV feel and what they are going through. A participant stated:

“I think, I became more careful after that (the occupational exposure to HIV) and open my eyes to the experiences people had when they get the news that they are HIV positive” (OC8).

Similarly, a participant also said:

“When I got the needle prick, I said ah no, we have to be friends with everybody no matter the condition. We need to help because the cause may be known or not known. So, we shouldn't avoid them” (OC5).

The statements from these participants indicated that they had a better appreciation of what people living with HIV experience and the need to protect them from stigma since the cause of exposure to HIV is not only due to an immoral lifestyle.

In answering the research question: “What are the coping strategies used by health workers occupationally exposed to HIV till confirmed HIV negative?”, a theme emerged namely; coping strategies. This is presented in the following paragraphs.
4.6 Coping Strategies

Coping is everything the participant did and or thought about to reduce stress. All the participants coped with the stress of being occupationally exposed to HIV. There were various coping styles used by the participants. Some of the participants prayed to God for an HIV negative status outcome. Some of the participants also pursued and tried solutions that will prevent them from getting infected with HIV. Other participants coped by keeping a positive thinking regardless of the situation. Some participants also coped well with the support of the society through interventions such as reassurance, motivation and helping them with their daily living activities. The participants started coping immediately they started feeling stressed from the occupational HIV exposure. Most of the participants ended their coping when it was confirmed they had not or will not get infected with HIV after the occupational HIV exposure. The sub-themes identified were praying for a good outcome, seeking for a solution, emotional coping, and social support.

4.6.1 Praying for a Good Outcome

Some of the participants coped with the stress of being exposed to HIV by praying to God to prevent them from being infected with HIV from the occupational exposure to HIV. Some of the participants reported that they felt well after praying to God. A participant narrated:

“I prayed. I prayed to God that the result comes out negative. At least that one will make me feel better” (OC9).

Similarly, another participant said:

“I didn’t do anything. I just prayed about it. I felt I didn't feel scared” (OC3).

Another participant also expressed a similar experience by saying:

“I pray a lot. Spiritually I was just praying to my God. Spiritually, I did that and I was really happy at the end of it all it, came out to be negative” (OC4).

In light of what these participants were saying, it appears that the participants were relieved of the psychological stress of being exposed to HIV after praying to God.
The prayer made them feel good and happy. The prayers were to ensure a good outcome after the occupational HIV exposure.

### 4.6.2 Seeking for Solution

Participants looked for ways to prevent themselves from getting infected with HIV after the occupational HIV exposure. Some participants also coped by taking steps to test the source of HIV exposure after the occupational exposure to the HIV. A participant narrated:

> "When we explain things to the patient and then took this sample for the test. Before the result I was, it was mixed feelings. I didn’t, I was anxious. I didn’t know the outcome of the result and so I was just scared. After the result (HIV negative result) came in I was relaxed” (OC9).

The narration from this participant seems to mean that, the participant became relieved after taking steps to check the HIV status of the source of exposure.

Another participant said:

> "So immediately the pricks happened, I informed, for all of them I informed my superiors who were around at the time and then redirected me as to what to do. I was counselled by the public health units. So, that was how. I was counselled and then, I was at least made to know of the statistics. So that allayed my fears a bit’ (OC8).

This statement from the participant seems to imply that, the participant was able to cope by consulting the experts in PEP after the occupational exposure to HIV for counselling and information which helped to allay his fears.

Similarly, another participant said:

> "Well, the coping strategy I did a lot of research on HIV. So, the research I did, even till now I still continue to do my research. Yes and you know I make sure I read more about the virus and then I look at in the signs and symptoms and the signs and symptoms then I compared it to my current life because is after five years now and I don’t know how it will be but then when I compare all what the research I’ve done on it then compared to my current situation, well I don’t see anything. I don’t see myself experiencing such thing. Yeah, I don’t see myself in the research I have done. So, let me see like I’ll say I’m
Based on the narrative of the participant, it seems that the participant coped with the HIV exposure by reading more about HIV/AIDS. The participant searched for information which helped him identify if he may be infected. The information searched by the participant suggested to him that he was less likely to be infected with HIV after the HIV exposure and hence, led to the participant coping better.

4.6.3 Emotional Coping

Other participants coped with emotional changes. Participants influenced how they felt about the HIV occupational exposure to ensure that they cope with the stress through some actions such as crying, avoidance, positive cognitive appraisal, blaming, and diversional activities. Some of the participants used the avoidance coping strategy in coping with the side effect of HIV post-exposure prophylaxis and post-exposure HIV testing.

A participant indicated that:

“Yes, but initially I psych my mind to live, to don't find myself worrying too much because of this thing but I just prepare my mind to live freely if, should there be anything like positive confirmation. Yeah. So, that is the way I control myself from then” (OC1).

It can be seen from the participant’s statement that, the participant felt that by thinking that they are not in danger and they will not be infected with the HIV from the exposure allayed their worries.

Another participant narrated her experience by saying:

“The in-charge of the VCT units, each and every time I go there, I'll be crying and she'll be consoling me. With time or after taking the medicine you'll be fine. That was all. They really encouraged me to take the drugs” (OC10).

Based on what the participant was saying, it seems that the participant coped well when she was able was able to cry.
A participant also said:

“All I do is maybe talk a lot to friends, family. So that it will just push my mind off what I was thinking then because when I'm idle, seated, that is when thoughts start coming, but when I'm preoccupied, I don’t think about those things” (OC4).

This statement from the participant showed that, the participant uses the diversional strategy of preoccupying the mind in order not to think about the occupational exposure to HIV incident. This diversion helped the participant to cope.

Another participant also used avoidance as a coping strategy after the occupational HIV exposure. The participant said:

“I was weak and so after two weeks, I stopped taking the drug because the way it was making me feel, I didn't like it, at all. So, I stopped taking the drug and I've not mastered the courage to go and test again since then. So, I have not tested again. I'm afraid I wouldn’t tests” (OC3).

This statement from the participant seems to show that the participant did not want to undertake the HIV test which she was afraid may be positive because she did not complete the post-exposure prophylaxis. Hence in order not to risk being tested HIV positive, the participant used avoidance of HIV testing as a coping strategy which is an emotional coping strategy.

Another participant also thought that:

“So, I was not angry to anybody but to the patient's I was, I was very angry. Because he intentionally pulled himself. That was why I have that prick” (OC10).

The participant’s statement indicated that the participant tried to cope by blaming and being angry with the patient. This coping strategy is a non-productive was of coping.
4.6.4 Social Support

Some participants felt that they were adequately supported by their families, friends and/or the organisation through the stress of the occupational HIV exposure. The support included reassurance, motivation, consoling, and providing care for the side effects of the HIV post-exposure prophylaxis treatment. The participants indicated that the support from the family, friends and the organisation were essential for their effective coping with the occupational HIV exposure.

In relation to participants being motivated by family, friends, and co-workers to cope with the occupational exposure to HIV, a participant narrated her experience in which she said:

“So especially my mom, she has been very motivating. She always tells me no she, she, knows I would not get it. So, they really helped me a lot, family, and my friends. They kept motivating me and talking to me that I shouldn’t think like that” (OC12).

Similarly, another participant stated:

“The doctor sat me down and counselled me. He took my number so he kept sending me motivational messages that made things better. I understood that he cared” (OC6).

Based on what these participants were saying, it seems that the motivation from family, friends, and co-workers helped them to cope with the stress of being occupationally exposed to HIV.

A participant coped when he received care and support for the side effects of the post-exposure prophylaxis by family and friends to go through the activities of daily living. The participant stated:

“I had a friend who was my neighbour, a colleague nurse here who is my neighbour. So, she would come and prepare my meals at home when I had the diarrhoea and I couldn’t do anything. She was very supportive and so I was okay and off the drug and came back to work. (OC6).
Another participant also narrated:

“People showed me others who are taking the medications before so I spoke to them. Some of them in the facility I went to personally see them, and we communicated and that helped the situation too” (OC11).

This statement from the participant indicates that the participant coped well when she was introduced to other health workers who also had occupational HIV exposure. The relationship with other health workers who had occupationally been exposed to HIV helped to reduce her worries and improved her situation.

A participant was encouraged and consoled by co-workers which helped her to cope well with the situation. The participant said:

“So, I started crying. I got scared. I wasn’t even eating. It was my in-charge, who was trying to encourage me. My mom was there for me. She keeps giving me words of encouragement. She was there for me and my best friend as well. The in-charge of the VCT units, each and every time I go there, I’ll be crying and she’ll be consoling me. I had wanted to measure my name. And she would tell me, oh stop it, don’t cry. With time or after taking the medicine you’ll be fine. That was all. They really encouraged me to take the drugs” (OC10).

Based on what the participant was saying, it appeared that the participant was able to cope with the occupational HIV exposure by being reassured, calmed, encouraged, supported, and comforted by the family, friends, and co-workers.

A participant also stated:

“And then there was a lot of assurance to that, ooh it’s, the transmission rate is very low. So, I shouldn’t be worried yeah, but I also took, yeah so most of it was reassurance” (OC8).

The statement from the participant indicates that being reassured helped the participant to cope emotionally with the HIV exposure.
4.7 Summary

In summary, chapter four of this thesis describes the findings from the collected data from health workers exposed to HIV while working. The data from the participants’ experiences produced four (4) main themes and fourteen (14) sub-themes. The findings indicated that in exploring occupational HIV exposure participants revealed that non-adherence to safety standards was the main cause of the HIV exposure and that most of the causes were preventable. Side effects of the post-exposure prophylaxis and systemic care lapses after the occupational HIV exposure were major challenges faced by the participants. This was because the effects of these challenges were very serious as they led to non-adherence to HIV post-exposure prophylaxis treatment. The emotional effects and the side effect of the post-exposure prophylaxis were also the major effects that were experienced by participants. There was a grave damaging effect of occupational HIV exposure on the relationships between participants and people such as family members, friends, co-workers and patients. The participants also used various coping strategies such as seeking a solution to help prevent HIV infection after the occupational exposure to HIV. A major problem was the difficulties in coping with the side effects of the post-exposure prophylaxis treatment by participants. The social support was also not adequate in meeting the needs of the participants to cope with the HIV exposure especially while participants were experiencing side effects from the PEP treatment. The study added to the body of knowledge by clearly examining the peculiarity of the participants in the context of health workers exposure to a highly stigmatized condition such as HIV. This study also added to the body of knowledge by shows that most health workers exposed to occupational to HIV do not have adequate social support from friends, family and co-workers in dealing with the side effects of the PEP medications.

These findings are discussed and compared with the existing literature in the next chapter.
5.1 Introduction
The purpose of this research was to explore the occupational exposure to HIV and how health workers cope at the Korle Bu Teaching Hospital. The study explored occupational exposure to HIV and coping using in-depth interview of twelve health workers exposed to HIV while working. This investigation had the subsequent specific objectives:

1. To identify the perceived causes of the occupational exposure to HIV.

2. To find out the challenges faced by health workers who have been exposed to HIV at work.

3. To find the effects of the occupational exposure to HIV on the lives of the affected health worker.

4. To explore the coping strategies used by the health workers occupationally exposed to HIV till confirmed HIV negative.

Four main themes arose from the content analysis of the research based on the specific objectives of the study and the interview data. The main themes were the causes of occupational HIV exposure, challenges to health workers, the effect of occupational HIV exposure on health workers’ lives, and coping strategies. In this chapter, the key findings of this study were deliberated using current and relevant literature.

5.2 Causes of Occupational HIV Exposure
This aspect discusses the causes of occupational HIV exposure. Under this main theme from the findings, causes of occupational exposure to HIV are as follows: sharp injury and direct contact with bodily fluids on the skin. The literature is consistent with the main causes in
the findings from this study as it describes the exposure to HIV as the contact with blood, tissues and other bodily fluids that are possibly infectious, through injury to the skin, mucous membrane and non-intact skin (Kuhar et al., 2013). Other sources of literature, in line with this finding, viewed the causes of occupational exposure to HIV as through injuries from any HIV infected bodily fluids, exposed sharps such as needles or any sharp objects and the exposure of HIV infected bodily fluids in the mouth, eyes, nose and on broken skin (National AIDS/STI Control Programme, 2016). Most of the causes of occupational exposure to HIV were in line with the literature because the participants were from diverse group of health workers such as nurses, doctor, biomedical scientist, midwife and health assistant.

The finding shows that most of the causes of occupational exposure were due to non-adherence to standard precautions. This finding is affirmed by a study which showed that poor attitude or non-compliance of the standard precautions or universal precaution led to the cause of occupational HIV exposure (Akinboro et al., 2012; Anju et al., 2012; Leszczyszyn-Pynka et al., 2015; Reda et al., 2010). Other studies reviewed, attributed the causes to other factors such as fatigue, rushing, and lack of assistance (Sharma et al., 2010). The literature indicated that the main cause of occupational exposure to HIV is through sharp injuries to the skin (Jaybhaye et al., 2014; Kumakech et al., 2011; Shriyan & Annamma, 2012). This is consistent with the findings of the study in which sharp injuries were found to be the major cause of the occupational exposure to HIV. The findings also indicated that occupational exposure to HIV was by needle injury through recapping of the needles. The recapping of needles was also revealed in literature as one of the ways occupational exposure to HIV occurs through needle injury (Anju et al., 2012; Reda et al., 2010; Sharma et al., 2010; Shriyan & Annamma, 2012). The finding revealed that the improper disposal of sharps such as needles leads to the occupational exposure to HIV.
through needle injury. This finding was confirmed by a study that found improper disposal was the most common cause of needle injuries among health workers whiles working (Anju et al., 2012; Bobby et al., 2011; Serinker et al., 2009). Another finding indicated that participants got pricked with the used needle during the process of administering medication through an injection. Needle injuries during the administration of injection were found in the literature as one of the ways occupational exposure to HIV occurs (Shriyan & Annamma, 2012). The needle injuries during the administration of injection was due to sudden movement of the patient during the injection or can be due to uncooperative patients being given injection especially children.

Direct contact with bodily fluids such as the amniotic fluid through splash was another cause of occupational exposure to HIV according to this study’s findings. Literature also attests that direct contact through a splash of bodily fluids such as blood, and amniotic fluid caused exposure to HIV at work for health workers (Serinker et al., 2009). The splash of bodily fluids on the mucous membrane of the eyes and/or mouth is a form of occupational HIV exposure (Sreedharan, Muttappallymyalil, & Venkatramana, 2010). Another study found that most of the occupational exposure to HIV were from the splash of bodily fluids such as blood, amniotic fluid, and blood containing vomitus, sputum, and saliva, occurs through the mucous membrane of the eyes (Leiss et al., 2009). The findings indicated that a participant was not wearing the recommended protective clothing to prevent the occupational exposure to HIV. These recommended protective clothing, especially in the case of delivery, are boots, plastic apron, plastic hair cap, eye goggles, gloves, and face shield to protect the health worker from occupational exposure to HIV (National AIDS/STI Control Programme, 2016). The causes of occupational exposure to HIV from the findings in this study are mostly preventive with the use of the standard precautions or universal precaution. This was
supported by a study that allured that most of the causes of occupational exposure to HIV are the preventable (Kumakech et al., 2011).

5.3 Challenges to Health Workers

The findings revealed that participants experienced challenges after the occupational exposure to HIV. These challenges to the health workers were the side effects of post-exposure prophylaxis drugs, systemic care lapses after exposure and inadequate social support according to the findings of the study. The literature revealed various current studies that described these challenges that health workers face after the occupational exposure to HIV.

One of the challenges revealed in this study was that participants who took the post-exposure prophylaxis experienced side effects such as dizziness, vomiting, nausea, weakness, and diarrhoea which made their lives very difficult. In the reviewed literature, the side effects of the post-exposure prophylaxis medication were seen as a major challenge to health workers in the management of the HIV occupational exposure. Some of the side effects included vomiting, nausea, dry mouth, diarrhoea, weight loss or gain, dizziness, numbness, skin rash, nightmares, depressive mood (Chen et al., 2013; National Health Service United Kingdom, 2015), headache, fatigue, weakness, anorexia, general body pains, fever, itching, jaundice, abdominal pains and malaise (International Association of Providers of AIDS Care, 2014; National Health Service United Kingdom, 2015; Tetteh et al., 2015).

Not all the side effects of the HIV post-exposure prophylaxis were reported by the participants in this research. Many participants in this study reported that they experienced nausea as a side effect of the post-exposure prophylaxis. This was consistent with a study in the Korle Bu Teaching Hospital that indicated that nausea is the most common side effect of post-exposure prophylaxis (Tetteh et al., 2015). This study found that none of the
participants experienced life-threatening or serious side effects when they took the post-exposure prophylaxis medication. This is because the life-threatening or serious side effects of PEP are very rare and may need to use a large sample size in order to get participants who have experienced them. The literature from other research studies showed that serious or life-threatening side effects such as hepatitis and hypersensitivity reaction are rarely experienced but when experienced the post-exposure prophylaxis should be discontinued (Office of AIDS Research Advisory Council, 2018; Tetteh et al., 2015). This means that these serious side effects are so rare that none of the participants in this study experienced them.

The findings of this research also discovered that some of the participants did not adhere to or discontinued the post-exposure prophylaxis due to the impact of the side effects of the post-exposure prophylaxis drugs. Studies from literature supported this finding, as studies found that the adverse effects of the post-exposure prophylaxis were so challenging to health workers exposed to HIV occupationally that most of them did not adhere to the post-exposure prophylaxis medication (van der Maaten et al., 2010; Mill et al., 2014; National AIDS/STI Control Programme, 2016; Tetteh et al., 2015). The findings of the research revealed that not so much was done to relieve the side effects of the medication except in one case where the medication was changed. This is corroborated by a study that suggested the use of alternative antiretroviral drugs with more tolerable side effects which enhanced adherence to the PEP medications (Chen et al., 2013). A study recommended that, in cases of severe side effects from the post-exposure prophylaxis treatment, the PEP medication should be withdrawn from the HIV exposed health workers (Tetteh et al., 2015). It seemed that most of the participants did not know what to do when they experienced the side effects and there were no effective remedies to alleviate the side effects.
Another challenge that the participants experienced according to the findings from the study was systemic care lapses after exposure to HIV. These systemic lapses included some cases where the recommended post-exposure care was not adhered to strictly. In one case, the participant was not given the HIV post-exposure prophylaxis treatment (PEP) within the recommended 72 hours after the occupational HIV exposure. These findings are supported by a study that found that the start of an HIV post-exposure prophylaxis treatment delayed for about eighty four (84) hours after the occupational HIV exposure due to delay in the reporting of the incidence and delay in the laboratory reporting a positive result from the source of exposure (Anju et al., 2012; Upjohn et al., 2012). The reason for the delay in the taking of the HIV post-exposure prophylaxis from the findings of this study was the unavailability of medication at the time it was needed. The unavailability of PEP medication was also revealed by a study that showed that unavailability of HIV post-exposure prophylaxis results in non-use of the drug to prevent HIV infection (Olaleye et al., 2013).

Another systemic care lapse after exposure to HIV from this study also revealed that opportunity was not taken to test the source of occupational exposure to HIV. This finding was reinforced by a research in Nigeria which showed that some of the health workers occupationally exposed to HIV did not get the source of the exposure tested for their HIV status (Owolabi et al., 2012). This study also revealed that some participants did not report and record the incidence of the occupational HIV exposure which was due to their perception that the exposure was not a threat. This finding is in line with findings of other studies that showed that health workers under-reported and recorded the incidence of occupational exposure (Anju et al., 2012; Jaybhaye et al., 2014; Kumakech et al., 2011; Mendelson & Meintjes, 2009; Mill et al., 2014; Rampal, Zakaria, Sook, & Zain, 2010). It was also discovered from the study that a participant was given the wrong type of HIV post-exposure prophylaxis medication. This finding is explained by a study that indicated that
not all antiretroviral drug is recommended for post-exposure prophylaxis because of the severe adverse effects of this antiretroviral medication (Kuhar et al., 2013).

Follow up of health workers occupationally exposed to HIV is an essential part of the process of effectively ensuring the administration of PEP and prevention of HIV infection (National AIDS/STI Control Programme, 2016). This study revealed that PEP staff did not ensure follow-up for participants to ensure the participants were adhering to the PEP treatment. In relation to follow-up, a study found that health workers did not get the recommended follow-up required for PEP treatment (van der Maaten et al., 2010). The chances of health workers not getting the recommended follow-up was increased with successive follow-up visits, and delay in taking the PEP for more than 24 hours (Papavarnavas et al., 2017). Another study also showed that follow up of health workers on PEP to ensure adherence to the treatment was poor (van der Maaten et al., 2010).

This study also revealed from its findings that inadequate social support from the workplace by co-workers is a challenge to the health workers occupationally exposed to HIV as some co-workers did not reassure the participant but rather rebuked the health worker. The support for health workers who were occupationally exposed to HIV is psychologically facilitated to complete the PEP (Mendelson & Meintjes, 2009; Padilha & Villarinho, 2015). Some health workers may support in the form of reassurance (Wald, 2009). It is recommended that the health workers’ supervisors should support them by talking with the affected health worker, enquiring for side effects of the PEP and listening to the worries of the health workers (Lin et al., 2008). Although some participants felt that they were not supported in the workplace, most of the participants had support from their families to help them cope.
5.4 The effect of Occupational HIV Exposure on Health Workers’ Lives

The findings of this study showed that occupational exposure to HIV had various effects on the lives of health workers. These effects consist of physical effects, emotional effects, social effects, the increase sense of caution, and empathy for individuals living with HIV.

The results from this research revealed that apart from the risk of being infected with HIV, most of the physical effects from the occupational exposure to HIV were related to the side effects of the post-exposure prophylaxis. Some of these side effects from this study were nausea, vomiting, diarrhoea, dizziness, loss of weight, inability to sleep, skin rash, and general body weakness. This is supported by studies that showed that health workers on PEP treatment may experience side effects such as vomiting, nausea, dry mouth, diarrhoea, weight loss or gain, dizziness, numbness, skin rash, nightmares, depressive mood (Chen et al., 2013; National Health Service United Kingdom, 2015), headache, fatigue, weakness, anorexia, general body pains, fever, itching, jaundice, abdominal pains and malaise (International Association of Providers of AIDS Care, 2014; National Health Service United Kingdom, 2015; Tetteh et al., 2015). The side effects of the PEP have so much physical effects on the affected health worker that some discontinue the medication and some are given sick leave to help deal with the effects (van der Maaten et al., 2010; Tetteh et al., 2015). Some of the effects of the PEP side effects are so serious and even life-threatening that they lead to hospitalization and complications (Chen et al., 2013). The study also revealed that the side effects of the post-exposure prophylaxis affected the activities of daily living of some of the participants as these made them weak to do those activities such as cooking and cleaning. These side effects of the PEP are very discomforting to the health worker and affect the quality of life of these health workers as they physically feel the pains, weakness, irritation and the inability to properly perform some of the activities of daily
living such as cooking, eating, bathing and even getting out of bed (Chen et al., 2013; Oguntibeju, 2012).

The findings from this study also revealed that there were emotional effects from the occupational exposure to HIV on the participants. These emotional effects were sadness, fear, anxiety, anger, and guilt which resulted from the risk of being infected with HIV. This finding was supported by studies that indicated that a health worker exposed to HIV occupationally experiences emotions such as fear, anxiety, anger, guilt and even severe emotional effects such as depression and post-traumatic anxiety disorder (Green & Griffiths, 2013; Vieira & Padilha, 2008). The findings also showed that health workers were relieved of fear, and anxiety after the HIV test result showed that the source of the HIV exposure was HIV negative. These emotional effects are relieved by the knowledge that they will not get infected with HIV or the source of exposure is HIV negative (Cowan & Macklin, 2012; Wald, 2009). However, some health workers continue to experience some emotional effects such as anxiety after they were confirmed that they did not get infected with HIV (Green & Griffiths, 2013; Wald, 2009).

The persistence of these emotional effects in the long term was seen from the findings of this study which revealed that some of the participants felt unsure of their HIV status and hence compulsively checked it. Some participants were also afraid to check their HIV status after the occupational exposure. The anger experienced by some participants as effects from the HIV exposure was explained by studies in which health workers blamed people they felt were the cause of the occupational exposure to HIV (Wald, 2009). This was observed from the findings of the study as some participants blamed other health workers for causing the occupational HIV exposure and one participant was profoundly angry with the patient for allegedly intentionally causing her exposure to HIV at work. The effects of guilt was also observed as a result of health workers blaming themselves for not following the
recommended precautions to prevent the exposure; they blamed themselves for being the causes of the occupational exposure (Daley & DeMarco, 2010; Jeong et al., 2016; Wald, 2009). This was revealed in the findings of this study as a participant reported that he felt guilty for frequently being exposed to HIV as a result of not following the standard or universal precautions to prevent the exposure. The findings from this study showed that no participant reported that, they experienced severe emotional effects such as depression and post-traumatic anxiety disorder as found in the literature. The findings of this study also showed that most of the participants experienced fear in response to the occupational exposure. These findings were confirmed from studies that revealed that almost all health workers experience fear or anxiety as a result of the occupational exposure to HIV (Jeong et al., 2016; Lee, 2009; Wald, 2009).

The findings from this study revealed that participants experienced some social effects after the HIV occupational exposure. These social effects experienced led to the deterioration of the social relationships between the participants and other people. In one case, the participant felt a sense of mistrust and insensitivity from her supervisors because they blamed her and did not reassure her when she was exposed to HIV in the workplace. Findings from a study in Korea were consistent with this finding where being blamed by their superiors resulted in they not having the trust and confidence to report the incident when it happened (Jeong et al., 2016). Findings also revealed that sexual relationships between sexual partners were temporarily halted. Findings showed that halting of sexual relationships among participants and their sexual partners was consistent with a study which showed that there were disruptions in the sexual relationship of health workers occupationally exposed to HIV due to the fear of putting their partners at risk of being infected with HIV through sex (Green & Griffiths, 2013; Lin et al., 2008). The finding also revealed a case where a participant’s relationship with a patient deteriorated because the
participant blamed the patient for intentionally causing the occupational HIV exposure. These findings are supported by a study that revealed that health workers experience deterioration in the relationships with friends, family, co-workers, and patients (Daley & DeMarco, 2010). This deterioration in the relationship may be due to the blaming, anger, fear, and unfulfilled expectation from these individuals (Daley & DeMarco, 2010; Wald, 2009). These social effects seem to lead to an effect on patient care, reporting of HIV exposure incidence, adherence to PEP, and in general the quality of life of the health worker.

Another finding from this study also revealed that participants experienced the effect of feeling an increased sense of caution to being occupationally exposed to HIV after the incident. Studies support this finding as health workers tend to abide strictly to the recommended standard precaution (Jeong et al., 2016) but some health workers also tend to refuse care for patients living with HIV for the fear of being exposed to HIV again leading to a form of discrimination (Lee, 2009). Some of the health workers also tend to avoid or fear certain procedures that increase their risk of getting exposed to HIV (Mill et al., 2014).

The findings from this study also revealed that participants experienced better appreciation for people living with HIV. This experience is in relation to the fear of HIV infection and the side effects of the antiretroviral therapy which led to some of the participants rethinking of the activities that stigmatize people living with HIV. These findings were supported by studies that revealed that health workers developed appreciation and empathy for people living with HIV in relation to the fear of being infected and side effects of the antiretroviral therapy (Daley & DeMarco, 2010; Ziady, 2008). This empathy reduces stigmatization of people living with HIV by the affected health workers which improves care (Lin et al., 2012).
5.5 Coping Strategies

This section is about how health workers coped with the stress resulting from the occupational exposure to HIV. The finding from this study revealed that all the participants coped with the stress in diverse ways. The participants used coping strategies such as praying for a good outcome, seeking a solution, emotional coping, and social support. Studies from the literature revealed a number of coping strategies used by health workers occupationally exposed to HIV such as caring for the site of the HIV exposure, reporting the incidence, adhering to the HIV post-exposure prophylaxis treatment, praying to God, avoiding of the PEP due to side effects and not reporting of the incidence (Daley & DeMarco, 2010; Jeong et al., 2016). Other studies also indicated that some health workers cope with an initial denial of the occurrence of the occupational HIV exposure (Ziady, 2008). Furthermore, literature also viewed reassurance, social support, and searching for information on occupational exposure to HIV as ways to enhance coping (Green & Griffiths, 2013; Hirsch et al., 2015).

The findings from this study showed that participants used praying to God to cope due to the fear of occupational HIV exposure. These participants believed that with faith in God, they will not get infected with HIV and this makes them feel less fearful and anxious. This finding from this study is in line with a study that indicated that health workers use prayer to God as a form of coping to relieve the stress of being occupationally exposed to HIV (Jeong et al., 2016; Mill et al., 2014). Praying is widely used as emotional-focused or passive coping mechanism to deal psychologically with stress (Levine, 2008; Salaree et al., 2014). This study also found that prayers to God were offered by the participants and the families. This finding is consistent with a study that revealed that both health workers and significant others of the health workers use prayer as a coping strategy to relieve stress from the occupational exposure to HIV (Jeong et al., 2016; Aristotelis et al., 2015; Mill et al., 2014).
The findings from this study also showed that some of the participants only prayed without taking any action such as taking PEP treatment to prevent the infection whiles some of the participants prayed and took action to prevent acquiring the HIV infection. Other studies’ findings were consistent with this finding as some health workers only relied on prayer to cope with the stress of being exposed to HIV while some included actions to prevent the HIV infection (Mill et al., 2014). The findings from this study showed participants who claimed not to have used prayer to God as a way of coping with the stress of being occupationally exposed to HIV.

Active or problem-focused coping strategies is a helpful way of coping with occupational exposure to HIV in which health workers, seek first aid treatment, report the incident, test the source of exposure for HIV, adhere to the PEP, follow-up and seek more knowledge after the occupational exposure (Jeong et al., 2016; Carroll, 2013). This coping strategy was used by participants in this study by seeking for a solution to the HIV exposure by looking for ways and taking action to prevent themselves from getting infected with HIV after the occupational HIV exposure. In an effort to cope by looking for and taking action to prevent the infection from the occupational exposure, the findings of this study revealed that the participants ensured that the HIV status of the source of exposure is tested. This finding is consistent with studies’ findings that indicated that health workers, immediately after an occupational exposure to HIV ensure that the source of exposure is tested for their HIV status. This is seen as an active coping strategy and if the HIV status turns out to be negative, their fear of being infected with HIV is relieved (Cowan & Macklin, 2012; Daley & DeMarco, 2010; Jeong et al., 2016). Another finding of this study revealed that some of the participants also coped by consulting the experts in PEP after the occupational exposure to HIV. This was to get more information to make an informed decision on what to do to prevent being infected with HIV and the chances of getting infected with HIV. This finding
is supported by literature that indicated that health workers occupationally exposed to HIV may cope by seeking help from authorities to get tested for HIV, PEP treatment, counselling, and follow-up but others may seek help from their spiritual leaders (Ward et al., 2009; Daley & DeMarco, 2010; Jeong et al., 2016). Also, findings indicated that the health worker seeks information from researching on occupational exposure to HIV and everything about HIV/AIDS. Similarly, the literature also revealed that health workers researched for information about occupational exposure to HIV and HIV/AIDS in general, that is the cause, manifestation, and prevention (Folkman, 2010; Daley & DeMarco, 2010; Jeong et al., 2016).

In coping with the HIV exposure, the finding from this study showed that participants emotionally coped by using coping strategies such as crying, denial, avoidance, positive cognitive appraisal, reassurance, blaming, and diversional activities. These emotional coping strategies made the participants feel relieved of the stressful effects of the occupational exposure to the HIV (Schoenmakers et al., 2015). These coping strategies were classified as passive coping mechanisms in a study where health workers exposed to HIV coped by crying, denial, avoidance, positive cognitive appraisal, reassurance, blaming, and diversional activities (Hirsch et al., 2015; Jeong et al., 2016; Ziady, 2008).

Finally, findings from this study revealed that the participants used social support to help cope better with the fear and side effect of the PEP treatment. The support which were given by families, friends, and co-workers consisted of being given reassurance, motivation, consoling, providing care for the side effects, counselling, testing and provision of the HIV post-exposure prophylaxis treatment. These coping strategies are consistent with studies that revealed that health workers occupationally exposed to HIV perceived coping as helpful when the family, friends, and co-workers were compassionate, caring, present with them and validated their experiences (Daley & DeMarco, 2010). This coping strategy is called
relationship-focused coping which basically comprises of support provision, empathic responding and attempting to resolve differences (O’Brien et al., 2009).

5.6 Effectiveness of the Transactional Model of Stress and Coping Used in this Study

The Transactional Model of Stress and Coping was used to help the researcher to understand occupational exposure to HIV and how health workers cope with occupational exposure to HIV. The Transactional Model of Stress and coping has three major parts which are the primary appraisal, secondary appraisal and the coping effort (Glanz & Schwartz, 2008).

All the research objectives were related to some concepts in the Transactional Model of Stress and Coping. In this study, the objectives namely “to identify the perceived causes of the occupational exposure to HIV”, “to find out the challenges faced by healthcare workers who have been exposed to HIV at work” and “to find the effects of the occupational exposure to HIV on the lives of the affected healthcare worker” were related to the “primary appraisal” concept in the model. The primary appraisal concept in the model helps the health worker occupationally exposed to HIV to assess or appraise the challenge or the problem of being exposed to HIV. In the primary appraisal, the challenge is appraised by identifying the causality, impact, severity, and susceptibility to the challenge (Graham, 2015).

The “secondary appraisal” concept in the model refers to the resources available to the health workers who have been occupationally exposed to HIV in order to solve the problem and manage their emotions. Some of the possible resources available to these affected health workers were the expectation that there was the availability of HIV post-exposure prophylaxis treatment, HIV testing of the source of exposure, follow up HIV testing of the affected health worker, professional counselling, sick leave and the expectation that he/she will receive social support. The study objective: “to find out the challenges faced by healthcare workers who have been exposed to HIV at work” was also related to the
“secondary appraisal” concept since the study was to identify the non-availability or ineffectiveness of these resources for coping.

The concept of “coping effort” in the model contains various coping strategies which were classified as problem-based, emotion-based and meaning based coping (Lazarus & Folkman, 1984). The study objective: “To explore the coping strategies used by the healthcare workers occupationally exposed to HIV until confirmed HIV negative” was also related to the “coping effort” concept of the model.

The “adaptive coping outcomes” concept in the model was used to understand and appreciate what indicates success in coping, such as emotional well-being, adhering to treatment, functional status, and health behaviours.

This chapter discussed the main findings of this study in relation to relevant current literature in the body of nursing knowledge. The findings of this study were compared to the findings of current research occupational exposure to HIV and related studies. Current research findings that departed from the findings of this study were noted and discussed. The evaluation of the Transactional model of stress and coping in relation to the study was also discussed. In the final chapter that follows, the summary, implications, limitations of the study, recommendations, and conclusion are presented.
CHAPTER SIX

SUMMARY, IMPLICATIONS, LIMITATIONS,
RECOMMENDATIONS, AND CONCLUSION

6.1 Introduction

This chapter consists of the implications, summary, conclusion and the recommendations from the study. It outlines the implications for nursing practice, education, research, and policy. The field experiences or reflections by the researcher acquired from the study were also discussed.

6.2 Summary

This was an exploratory descriptive qualitative study, exploring occupational exposure to HIV and coping by health workers at the Korle Bu Teaching Hospital.

The study mainly showed that health workers exposed to HIV experience stress which has an impact on their quality of life and the health workers use various coping strategies to cope with the stress. All the health workers occupationally exposed to HIV experienced fear and anxiety. Health workers also experienced stress from the side effects of the HIV post-exposure prophylaxis which led to non-adherence.

There were various causes of occupational HIV exposure which the health workers reported and most of the causes were preventable. The study also identified a number of challenges health workers go through after an occupational HIV exposure. Some of the health workers also experienced lapses in their care in the facility, especially in relation to the HIV post-exposure prophylaxis. The effects of the HIV occupational exposure on the health workers were also found to consist of physical, emotional, and social effects. The study showed that health workers used diverse ways of coping with the stress produced as a result of the occupational exposure to HIV and the side effects of the post-exposure prophylaxis. These
coping strategies used by the health workers were divided into problem-based and emotion-based coping strategies.

Some health workers did not report and record the HIV occupational exposure based on a poor and inadequate assessment of the HIV exposure risks and identifying the source of exposure to be HIV negative. The study revealed that health workers coped well with the social support of family, friends, and co-workers. Some health workers felt that their health facility could have done more to support them.

6.3 Implications

The implications of the study were discussed in all the areas of nursing such as nursing: practice, education, research, and policy.

6.3.1 Implications for Nursing Clinical Practice

The clinical implication is that the study will improve the understanding of the experiences of health workers occupationally exposed to HIV which will help improve the care and support that nursing, and medical practitioners provide to improve their quality of life, HIV exposure reporting rate, and adherence to post-exposure prophylaxis medication.

Another clinical implication of the study is that various causes of the occupational exposure to HIV will help health workers and the health facilities to put in place preventive measures against the occurrence of occupational exposure to HIV. The implication of the study will also be the regular follow-up and support that will be given to help affected health workers adhere to the PEP treatment. The study findings will also help ensure the provision of adequate HIV test, PEP medication supplies and trained professionals at all times in the health facilities.

The information about the various coping strategies found in the study will help family, friends, co-workers and the health organisation to encourage helpful coping strategies such
as problem-based coping and discourage coping strategies such as denial and blaming which are harmful to the affected health worker. This information will also provide the affected health workers alternatives in coping with the occupational exposure to adequately deal with the stress.

6.3.2 Implications for Nursing Education

This study has implications for nursing and all health professionals’ education. The study provides very important information about occupational exposure to HIV by health worker that is needed in the education of health workers to ensure prevention of occupational exposure to HIV and transmission of the HIV infection. All health workers will benefit from the information from this study by incorporating it into the in-service training or continuous professional development programmes. The findings from the study also imply that health workers should be trained on ways to improve their coping skills.

6.3.3 Implications for Nursing Policy

The findings of this study suggest that HIV exposure insurance could be provided for all health workers by health institutions to ensure that health workers who experience adverse effects from the occupational exposure to HIV are compensated. The findings from the study also indicate that there should be a policy to ensure that all nursing or health workers are trained in the prevention of occupational exposure to HIV annually. Another implication of the study is the need for a policy to ensure that all health workers on HIV post-exposure prophylaxis be allocated an individual who will monitor them to take the PEP and support them. Another implication of the study is the need for policies within health institutions to ensure that all health workers occupationally exposed to HIV will go through counselling sessions by a clinical psychologist to treat any psychological or emotional effects.
6.3.4 Implications for Nursing Research

The findings of this study reveal areas in occupational exposure to HIV where further studies could be conducted. For instance, some of the themes that emerged from this study can be further investigated to gain a comprehensive understanding of the experiences of health workers occupationally exposed to HIV. Further investigation can be done using the quantitative approach where a large sample size can be used in the following areas:


2. Challenges facing health workers occupationally exposed to HIV in Ghana.

3. The impact of occupational HIV exposure on health workers’ lives and on the care of people living with HIV in Ghana.

4. Coping strategies used by health workers occupationally exposed to HIV in Ghana.

Studies can also be conducted based on this study by including the perspectives of family, friends, and co-workers on the experiences of health workers occupationally exposed to HIV.

6.4 Field Experiences/Reflections

This field experience/reflections were gathered throughout the study and recorded in the field diary as notes. The study was very revealing and enlightening to the researcher. The researcher developed friendship ties with the participants during the research. This study improved the perception of the researcher on what health workers occupationally exposed to HIV experience. The researcher felt empathetic towards the participants’ experiences. The description of the side effects of the post-exposure prophylaxis medication and how it affected them made the researcher appreciate the reasons why adherence to the PEP medication was low.
Most of the participants felt that their experiences were difficult and this was seen in their body gestures such as sighing when they were talking about it. Most of the participants were very eager to tell their stories as they readily made themselves available for the interview. Most of them were readily available for the study because they were introduced to the researcher by people, they trust through the snowball sampling technique used by the researcher to recruit participants. The overall alertness of the researcher, feedback to responses, and eye contact with the participants encouraged the participants to share more of their experiences with occupational exposure to HIV. It seemed the participants were happy and grateful to have had the opportunity to share their stories. The study was a great experience for both the participants and the researcher.

6.5 Limitations of the Study

The study helped in the understanding of the occupational exposure to HIV and coping used by the health workers. Nevertheless, there were some limitations. Students of health training institutions such as student nurses, medical students, and bio-medical science students were not used for the study and from whom we may have had different experiences or views. A small number of participants were also used for the study. Some of the participants were receiving calls from their mobile phones which disrupted the flow of the story. Regardless of these limitations, the findings from this study contribute to increasing the literature on occupational exposure to HIV in Ghana.

6.6 Recommendations

Based on the findings of the study, the ensuing recommendations were made:

6.6.1 Recommendations to the Health Workers

1. All health workers occupationally exposed to HIV should be encouraged by the staff prescribing the HIV post-exposure prophylaxis medication to choose somebody to
support and encourage them to complete the medication and also to care for them while they experience the side effects of the medication.

2. The health worker should ensure that if possible, the source of the HIV exposure should be tested as early as possible to help allay anxiety.

3. All health workers occupationally exposed to HIV should report and record the incidence of the occupational HIV exposure.

6.6.2 Recommendation to Individuals in the Society

1. The friends, co-workers, and families should constantly support the health worker occupationally exposed to HIV to cope by reassuring, motivating, encouraging them to complete the PEP medication and to care for them while they experience the side effects of the PEP medication.

6.6.3 Recommendations to the Korle Bu Teaching Hospital

1. The health facilities should enforce the adherence to standard precautions for all health workers at all times by increasing supervision and monitoring all health workers at risk of being exposed to HIV to ensure the standard precaution is strictly followed. This supervision and monitoring can be led by Infection Prevention Committees and the occupational safety units of each health facility.

2. The health facility should ensure that staff trained in the management of occupational exposure to HIV are available to manage health workers occupationally exposed to HIV at all times in the health facilities.

3. Staff should be trained by the health facility in effective ways of coping with occupational exposure to HIV by teaching them how to use more of the problem-focused coping strategies such as reporting the incident, testing the source of the HIV exposure and completing the PEP treatments.
4. The health facility should investigate the cause of every occupational exposure to HIV by health workers in order to provide preventive measures to ensure the incidence does not occur again.

5. All health workers occupationally exposed to HIV should be assessed and treated by the clinical psychologist for any psychological adverse effects.

6.6.4 Recommendation to the Government/Ministry of Health

1. The government, through the Ministry of Health and Ghana Health Service should enact a law or a policy to ensure every health worker is provided with hazard insurance to compensate all health workers occupationally exposed to HIV which resulted in the acquisition of the HIV infection and other complications.

6.7 Conclusion

The study concluded that health workers occupationally exposed to HIV experienced fear and anxiety. Health workers exposed to HIV experience stress as a result of the fear of being infected with HIV and the side effects of post-exposure prophylaxis. Despite the various causes of occupational exposure to HIV, sharp injuries such as needlestick injuries dominated as a cause of occupational HIV exposure resulting from improper disposal of sharps, and recapping of used needles. Another cause of occupational exposure to HIV is a splash of bodily fluids due to the lack of protective clothing. However, most of these causes of occupational exposure to HIV were preventable using standard or universal precautions.

After the occupational exposure to HIV, the health workers may suddenly develop a more cautious attitude toward preventing occupational exposure to HIV. Upon starting the post-exposure prophylaxis, most of the participants experienced the side effects of nausea as the commonest of the side effects. Anxiety and the side effects of the post-exposure prophylaxis led to a feeling of empathy for people living with HIV/AIDS after the occupational exposure.
to HIV. The relationships between the health workers occupationally exposed to HIV and their families, friends, and co-workers seem to have deteriorated after the occupational exposure to HIV.

The challenges faced by health workers occupationally exposed to HIV consist of care lapses, side effects of post-exposure prophylaxis (PEP) and lack of support at the workplace after the exposure. These challenges led to under-reporting and non-adherence to the PEP. Some health facilities did not ensure follow-up on health workers occupationally exposed to HIV.

The coping strategies used by the health workers comprised of caring for the site of exposure, reporting HIV exposure, testing for HIV status of the source, adhering to the PEP, anger, guilt, crying, praying, blaming, and denial. The study revealed that participants coped well with social support from family, friends, and co-workers. This social support improves adherence to HIV post-exposure prophylaxis despite the side effects of the HIV PEP treatment. Yet, some participants felt that their health facilities could have done more to support them.

The Transactional model of stress and coping was used to understand the coping with occupational exposure to HIV and guided the development of study objectives. The major parts of the model used in the study were the primary, secondary and coping efforts. The study added to the body of knowledge by clearly examining the peculiarity of the participants in the context of health workers exposure to a highly stigmatized condition such as HIV. Further studies are needed to assess the impact of occupational exposure to HIV on the care of people living with HIV in Ghana.
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Exploring Occupational Exposure to HIV and Coping


Exploring Occupational Exposure to HIV and Coping


Exploring Occupational Exposure to HIV and Coping

https://doi.org/10.1002/pon.1836

https://doi.org/10.1016/B978-1-4557-4096-3.00040-4


https://doi.org/10.1016/j.nepr.2010.12.004


https://doi.org/10.3389/fpsyg.2014.00502


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Exploring Occupational Exposure to HIV and Coping


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APPENDICES

Appendix A: Introductory Letter

UNIVERSITY OF GHANA
SCHOOL OF NURSING

SONM/A.12

Ref. No.: ------------------------------------

December 13, 2017

The Chairman
NMIMR – IRB
P.O. Box LG 581
Univ. of Ghana
Legon.

Dear Sir/Madam,

DEPARTMENTAL APPROVAL LETTER

This is to introduce to you Theophilus Baidoo, an MPhil second year student of the above School, who is to submit his thesis proposal for review and approval by the Institutional Review Board. His thesis topic, “Experiences and Coping Strategies of Healthcare Workers Occupationally Exposed to HIV,” Has been reviewed and approved by the Department of Adult Health of the School of Nursing and Midwifery.

Counting on your usual co-operation.

Thank you.

Yours faithfully,

[Signature]

Dr. K. A. conosc
SUPERVISOR

COLLEGE OF HEALTH SCIENCES
Appendix B: Ethical Clearance

NOGUCHI MEMORIAL INSTITUTE FOR MEDICAL RESEARCH
Established 1979A Constituent of the College of Health Sciences
Phone: +233-302-916438 (Direct) +233-289-522574
Fax: +233-302-502182/513202
E-mail: nirb@noguchi.ug.edu.gh
Telex No: 2556 UGL GH

INSTITUTIONAL REVIEW BOARD
University of Ghana
Post Office Box LG 581
Legon, Accra
Ghana

My Ref. No: DF:22
Year Ref. No:

10th January, 2018

ETHICAL CLEARANCE

FEDERALWIDE ASSURANCE FWA 00001824
NMIMR-IRB CPN 059/17-18
IRB 00001276
IORG 0000908

On 10th January, 2018, the Noguchi Memorial Institute for Medical Research (NMIMR) Institutional Review Board (IRB) at a full board meeting reviewed and approved your protocol titled:

TITLE OF PROTOCOL: The experiences of Coping with occupational exposure to HIV by health Workers at the Korle-Bu Teaching Hospital

PRINCIPAL INVESTIGATOR: Theophilus Baidoo, Mphil Cand.

Please note that a final review report must be submitted to the Board at the completion of the study. Your research records may be audited at any time during or after the implementation.

Any modification of this research project must be submitted to the IRB for review and approval prior to implementation.

Please report all serious adverse events related to this study to NMIMR-IRB within seven days verbally and fourteen days in writing.

This certificate is valid till 9th January, 2019. You are to submit annual reports for continuing review.

Signature of Chair: ........................................
Mrs. Chris Dudzie
(NMIMR – IRB, Chair)
Appendix C: Interview Guide

SEMI-STRUCTURED INTERVIEW GUIDE

Section A: Background information form/ Demographic Data

Code Number

1. Age (years)

2. Gender

3. Place of residence

4. Nationality

5. Tribe

6. Marital Status

7. Number of children

8. Profession

9. Level of education

10. Languages that are spoken

11. Religion (specify denomination)

12. When was the last time you were occupationally exposed to HIV?

13. Number of years you have been in the health service

14. Position in the institution

15. How many times have you been occupational exposure to HIV
Section B: INTERVIEW GUIDE

1. How did you got exposed to HIV occupational?
   - Probes:
     Type and amount of bodily fluid exposed
     Procedure or activities that lead to the exposure
     Source(s) of HIV exposure
     HIV status of the source(s)

2. What did you think was the cause(s) of the occupational exposure to HIV?

3. How did you feel after the HIV exposure occurred?
   - Probes:
     Emotionally and psychologically
     Physically
     Source of exposure (patient)
     Socio-culturally

4. Please, what did you do after the occupational exposure to HIV occurred?
   - Probes:
     Care of the site of exposure
     Reporting of incidence
     HIV testing and counselling
     Post exposure prophylaxis
     Any order non-prescribed HIV post exposure activities

5. How did your life change (both positive and negative) after the occupational exposure to HIV?
   - Probes:
     Physically
Psychologically
Socially
Economically
Spiritually

6. Please tell me how people relate to you after the occupational exposure to HIV?
   - Probes:
     Family
     Co-workers
     Friends

7. Kindly share with me what the incidence meant to you?

8. How did you cope with the occupational exposure to HIV?
   - Probes:
     Guilt
     Anger
     Post exposure prophylaxis side effects
     Fear of getting infected
     Stigma

8. How did the coping strategies used help improve your life after the occupational exposure?
   - Probes:
     Physically
     Psychologically
     Sociologically
Economically

10. Is there any other thing you would like to share with me?
Appendix D: Consent Form

APPENDIX C: INDIVIDUAL CONSENT FORM

Title of Study: Experiences and coping strategies of healthcare workers occupationally exposed to HIV.

Principal Investigator: Theophilus Baidoo

Address: School of Nursing and Midwifery, College of Health Sciences, University of Ghana, Legon.

P.O. Box LG 43

Accra

Telephone: 0246389312

E-mail: baidootheophilus@ymail.com

General Information about Research

Dear Participant,

I am a graduate nursing student from the School of Nursing and Midwifery, University of Ghana, Legon. I am carrying out a study and would like you to take part. The purpose of my study is to seek information from healthcare worker occupationally exposed to HIV to help me understand what you go through and how you cope. The interview will be conducted in one of the counseling room at the HIV post exposure counseling unit of the Korle Bu Teaching Hospital. I will have a one-on-one conversation with you either in English, Fante or Twi depending on your preference. There is no right or wrong answer and you can answer in your own words. The duration of the interview will be between 30 to 60 minutes. There may be a second interview when necessary. The conversation will be about what you have been through after your occupational exposure to HIV. You will
be asked to either sign or thumbprint a consent form. The conversation will be recorded on tape with your permission and later written in words. Your name will not be recorded on the tape. A unique number or false name will be given to your conversation. Those who will be aware of our conversation will be my supervisors. All information will be kept under lock and key for about 5 years after the study and thereafter destroyed.

Possible Risks and Discomforts

The study is not expected to pose any risk to you as a participant, but since the study is on occupational exposure to HIV, the risk may be emotional discomfort that may occur when you are describing your personal experiences. The researcher has arranged with a professional Clinical Psychologist for support without you paying anything (Clinical Psychologist, Miss Bridget Amoako-Atta, Telephone, 0246714485 daoakomansa@gmail.com, Pantang Psychiatry Hospital). The findings of this research will be published in academic journals and presented at research conferences. However, data will always be presented as group data hence no individual participants will be identified.

Possible benefits

The study may not give a direct benefit to you immediately, however, I hope your experiences will inform policymakers and other healthcare workers, in general, to appreciate the need to support the healthcare occupationally exposed to HIV of Ghanaian. This will enable health workers to strategize programmes tailored to the needs of healthcare workers exposed to HIV.
Confidentiality

The information you will give about yourself will be protected. Your name will neither be written in the interview guide nor appear in the report of the study. All information you will give in this study will be stored in a cupboard under lock and key at the School of Nursing and Midwifery, University of Ghana. The transcripts, audiotapes and field notes will only be accessible to the researcher and his supervisors.

Compensation

You will not be given any monetary compensation for participating in this study but a snack will be provided just to appreciate your participation.

Voluntary Participation and Right to Leave the Research

You have the right to take part in this study or refuse to take part or withdraw from the study at any stage. If you decide not to participate in this research or withdraw, it will not attract any penalty. You are free to leave the study at any point during the study even after you have agreed to be part of the study without any repercussion.

Contacts for Additional Information

Additional contacts: If you have any concerns, you may send an electronic mail (e-mail) or call the researcher or her supervisors using the following addresses:

Theophilus Baidoo: baidootheophilus@ymail.com ,Phone number: 0246389213

Dr. Kwadwo Arneyaw Korsah: korsahtalktalk@yahoo.com ,Phone number: 0243547317.

Madame Gladys Dzansi: gdzansi@edu.ug.gh ,Phone number: 0243059316

Thank you.
Your rights as a Participant

This study is approved by the Institutional Review Board of Noguchi Memorial Institute for Medical Research (NMIMR-IRB). If you have any questions bothering you about your rights as a research participant, you can contact the IRB Office between the hours of 8am-5pm through the landline 0302916438 or email address nirb@noguchi.mimcom.org.

VOLUNTEER AGREEMENT

The above document describing the benefits, risks and procedures for the research title *(Experiences and coping strategies of healthcare workers occupationally exposed to HIV)* has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

__________________________________________  ________________________________
Date                                               Name and signature or mark of volunteer

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

__________________________________________  ________________________________
Date                                               Name and signature of witness

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

__________________________________________  ________________________________
Date                                               Name Signature of Person Who Obtained Consent

*Valid until:* 09 Jan 2023
## Appendix E: Summary of demographic characteristics of participants

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Note: For marital status: M=married, S=single, and D= divorce. For languages: E=English, T=Twi, D=Dagomba, H= Hausa, Go=Gonga, F= Fanti, EW= Ewe, K= Komkomba and G= Ga.
PARTICIPANTS INFORMATION SHEET

Title of the study: Exploring occupational exposure to HIV and coping by health workers at the Korle Bu Teaching Hospital.

Name(s), Affiliation (s), of researcher(s):

Theophilus Baidoo: School of Nursing and Midwifery, College of Health Sciences, University of Ghana, Legon.

Dr. Kwadwo Ameyaw Korsah: School of Nursing and Midwifery, College of Health Sciences, University of Ghana, Legon.

Dr. Gladys Dzansi: School of Nursing and Midwifery, College of Health Sciences, University of Ghana, Legon.

Background: Sub-Saharan African and Asian healthcare workers have an average of nine occupational exposures to HIV per health worker per annum. Apart from the risk of acquiring HIV, the occupational exposures to HIV can lead to stressful outcomes such as anxiety, post-traumatic anxiety disorder and depression for the affected healthcare worker. However, the experiences and coping strategies of healthcare worker occupationally exposed to HIV seem to have not been adequately explored.

Purpose of the study: To explore the experiences and coping strategies of health workers occupationally exposed to HIV.

Procedure: A sample size of 12 participants have been occupationally exposed to HIV for six (6) months or more will be used for the study. All the participants will be selected from the medical, surgical, accident centre, child health, obstetrics and gynaecology and the central laboratory service department. A face-to-face interview was conducted using a semi-
structured interview guide. Interviews were audiotaped with participants’ permission and will last within 30 minutes or more at your place and time or convenience.

**Contact:** In case of any issue or questions relating to the study please contact Mr. Theophilus Baidoo (Principal Researcher) on 0246389312.

**Note:** Also, in any case concerning the conduction of the study, your welfare or your rights as a participant of the study, you may contact:

**The Chairman**

Institutional Review Board of Noguchi Memorial Institute for Medical Research, Legon Accra. Telephone: 0302916438

Email address: nirb@noguchi.mimcom.org.

**The Chairman**

Korle Bu Teaching Hospital Institutional Review Board

Korle Bu, Accra.