STRATEGIES TO IMPROVE COMPLIANCE TO POST EXPOSURE PROPHYLAXIS GUIDELINES FOR MIDWIFERY PRACTITIONERS AT SPECIFIC HOSPITALS IN GAUTENG PROVINCE, SOUTH AFRICA

by

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DEDICATION

I am dedicating this thesis to four beloved people who have meant and continue to mean so much to me. Although they are no longer of this world, their memories continue to impact my life.

First, to my mother, ‘Bomma’, Martha Mmadira Matlabyane, who unfortunately left just before the crack of dawn for this achievement. Your love and support for all your children were amazing. I will forever cherish your instillation of hope and encouragement through it all. In you, I am assured of having gained a great angel!

To my little brother, Martin Podile Matlabyane, words fail to express how losing you just five months after our mother’s departure did to me. Your journey seemed to be the hardest, yet you fought a good fight and finished your race well. Heavens have gained a warrior!

Next, to my late father, Solomon Matlatje Matlabyane, thank you for laying the foundation. Gone forever, but you will never be forgotten, ‘Tau’.

Last, to my maternal grandfather, Nelson Seitswadi Malahlela, whose value for education was of no bounds and through you, I have learnt the value of hard work. Thank you so much ‘Mohlalerwa’, I will never forget you. I am certain you would have been very proud of me!

DECLARATION

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Title:

Strategies to improve compliance to Post Exposure Prophylaxis guidelines for midwifery practitioners at specific hospitals in Gauteng Province, South Africa.

I declare that the above thesis is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

I further declare that I submitted the thesis to originality checking software and that it falls within the accepted requirements for originality.

I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other higher education institution.

SIGNATURE DATE: 2023/03/23

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ABSTRACT

Background: Midwifery practitioners as frontline healthcare workers remain susceptible to occupational exposure to infections while performing their routine duties. About 90% of occupational exposures occur in the developing world due to a lack of awareness and structured training in the prevention and management of accidental exposures. Midwifery practitioners are regularly exposed to amniotic fluid, vomitus, blood, urine, faeces, sweat, vaginal secretions and breastmilk. The World Health Organisation's HIV PEP guidelines are an essential instrument for the prevention of occupational HIV infection and have proven to be an effective method to prevent infections among healthcare workers.

Purpose: The purpose of the study was to develop strategies to improve compliance with Post Exposure Prophylaxis guidelines for midwifery practitioners in the Gauteng Province of South Africa.

Methodology: The study followed the concurrent mixed methods research approach with qualitative nested in quantitative design. The study adopted the non-experimental quantitative research with a cross-sectional descriptive design and a descriptive phenomenological design for the qualitative strand.

Sampling, data collection and analysis: A random sampling technique was used to collect quantitative data from seventy-one (71) midwifery practitioners. At the same time, a purposive non-probability sampling technique was used for the qualitative approach with two (2) OHS practitioners and 13 midwifery practitioners. Data was collected through questionnaires and semi-structured interviews. Quantitative data was analysed with SPSS version 24, and thematic analysis was used for the qualitative strand.

Results: Maternity units are a high-risk clinical area. The midwifery practitioners have good knowledge about PEP but fail to comply fully with the guidelines. The study revealed the underreporting of accidental exposures to blood and body fluids and the underutilisation of PEP services. The process of obtaining PEP after exposure is tedious, according to participants. Hence, some prefer to seek PEP services elsewhere. Strategies to improve compliance were developed in this study.

Conclusion and recommendations: High prevalence of accidental exposure to blood and body fluids must be managed effectively through informed interventions. Strengthening knowledge

about HIV PEP guidelines and standard precautions through continuous training was one of the developed strategies in the study.

Key Concepts: occupational exposure, midwifery practitioner, occupational health and safety, post exposure prophylaxis, guidelines, blood and body fluids, compliance assessment model, human immuno-virus, standards precautions, underreporting

KAKARETŠO

Bomorago: Babelegiši bjalo ka bašomi ba tlhokomelo ya maphelo ba diketapele ba dula ba na le kgonagalo ya gore ba ka kgwathwa mošomong ke diphetetšo ge ba dira mešomo ya bona ya ka mehla. Go kgwathwa mošomong wo e ka bago 90% go direga lefaseng leo le hlabologago ka lebaka la go hloka temošo le tlhahlo ye e rulagantšwego ya thibelo le taolo ya go kgwathwa ka phošo. Babelegiši ba kgwathwa kgafetša ke seela sa ka gare ga kobo ya lesea ka popelong, mahlatša, madi, mohlapologo, mantle, mofufutšo, ditšhila tša setho sa bosadi le maswi a letswele. Melawana ya PEP ya HIV ya Mokgatlo wa Lefase wa Maphelo ke sedirišwa sa bohlokwa sa thibelo ya phetetšo ya HIV mošomong gomme di ipontšhitše e le mokgwa wo o šomago wa go thibela ditwatši magareng a bašomi ba tlhokomelo ya maphelo.

Morero: Maikemišetšo a nyakišišo ye e be e le go hlama maano a go kaonafatša go latelwa ga melawana ya Kalafo ya Thibelo ya Phetetšo ya HIV morago ga Kgonagalo ya Phetetšo (PEP) go babelegiši ka Profenseng ya Gauteng ya Afrika Borwa.

Mokgwa: Nyakišišo e latetše tsela ya nyakišišo ya mekgwa ye e kopantšwego gotee moo khwalithethifi e tsentšwego ka gare ga tlhamo ya khwanthithethifi. Nyakišišo e amogetše nyakišišo ya khwanthithethifi yeo e sego ya diteko ka tlhamo ya tlhalošo ya kakaretšo le tlhamo ya ponagatšo ye e hlalošago ya elemente ya khwalithethifi.

Go sampola, kgoboketšo ya datha le tshekatsheko: Thekniki ya go sampola ka go se kgethe e šomišitšwe go kgoboketša datha ya khwanthithethifi go tšwa go babelegiši ba masomešupa-tee (71). Go sa le bjalo, thekniki ya go sampola yeo e sego ya kgonagalo ye e nago le morero e šomišitšwe bakeng sa mokgwa wa khwalithethifi le bahlankedi ba babedi (2) ba OHS le babelegiši ba 13. Datha e kgobokeditšwe ka mananeopotšišo le dipoledišano tšeo di rulagantšwego seripa. Datha ya khwanthithethifi e sekasekilwe ka SPSS ya phetolelo 24, gomme tshekatsheko ya sehlogo e šomišitšwe go elemente ya khwalithethifi.

Dipoelo: Diyuniti tša batswetši ke lefelo la kalafo leo le nago le kotsi ye kgolo. Babelegiši ba na le tsebo ye botse ka ga PEP eupša ba palelwa ke go latela melawana ka botlalo. Nyakišišo e utulotše go se begwe ka tshwanelo ga go kgwathwa ke madi le diela tša mmele ka phošo le go se šomišwe ka botlalo ga ditirelo tša PEP. Tshepedišo ya go hwetša PEP ka morago ga go kgwathwa e a lapiša, go ya ka bakgathatema. Ka lebaka leo, ba bangwe ba rata go nyaka ditirelo tša PEP mafelong a mangwe. Maano a kaonafatšo ya tatelo a hlamilwe mo nyakišišong ye.

Sephetho le ditšhišinyo: Go ata mo go oketšegileng ga go kgwathwa madi le diela tša mmele ka phošo go swanetše go laolwa ka tshwanelo ka magato a maleba. Go matlafatša tsebo ka ga melawana ya PEP ya HIV le magato a tšhireletšo ka tlhahlo ye e tšwelago pele e bile ye nngwe ya maano ao a hlamilwego mo nyakišišong.

Dikgopolo tše bohlokwa: go kgwathwa mošomong, babelegiši, maphelo le polokego mošomong, kalafo ya thibelo ya phetetšo morago ga kgonagalo ya phetetšo, melawana, madi le diela tša mmele, mmotlolo wa kelo ya tatelo, immuno-baerase ya motho, magato a tšhireletšo, pego tlase.

MANWELEDZO

Siangane: Vhabebisi sa vhashumi vha ndondolo ya zwa mutakalo vhane vha shuma vho tou livhana thwii na vhalwadze vha dzula vhe khomboni ya u ṱanea mushumoni kha malwadze musi vha tshi khou shuma mishumo yavho ya ḓuvha na ḓuvha. U ṱanea mushumoni hune ha lingana 90% hu vha hone kha mashango ane a kha ḓi bvelela zwi tshi khou itiswa nga u sa dzhiela nṱha na vhugudisi ho dzudzanywaho kha u thivhela na u langula u ṱanea kha khombo. Vhabebisi kanzhi vha ṱanea kha maḓitsireledzi, maṱanza, malofha, miṱambululo, malaṱwa, biko, mashika ane a bva kha bunyu na mikando. Nyendedzi dza HIV PEP dza Tshiimiswa tsha Mutakalo wa Ḽifhasi ndi tshishumiswa tsha ndeme kha u thivhela vhulwadze ha HIV mushumoni na u khwaṱhisedzwa sa ngona yo teaho kha u thivhela malwadze vhukati ha vhashumi vha ndondolo ya zwa mutakalo.

Ndivho: Ndivho ya ngudo heyi ho vha u bveledza zwiṱirathedzhi zwa u khwinisa u tevhedza u nwa mushonga u thivhela HIV nga murahu ha khonadzeo ya u ṱanea (PEP) nyendedzi dza vhabebisi Vunduni ḽa Gauteng Afrika Tshipembe.

Ngona: Ngudo yo shumisa khathihi kuitele kwa ngona dzo ṱanganelaho he khwaḽithethivi ya vha yo shumiswa na ngona ya khwanthithethivi. Ngudo yo shumisa ṱhoḓisiso ya u ṱalusa ya Khwanthithethivi na ngona ya u ṱalusa u thivhelwa ha malwadze na ngona ya tshibveleli tsha u ṱalusa kha u kuvhanganya na u saukanya khwaḽithathivi.

Tsumbonanguludzwa, u kuvhanganya data na musaukanyo: Ho shumiswa thekiniki ya tsumbonanguludzwa hu re na khonadzeo ya u nangwa i linganaho u kuvhanganya data ya khwanthithethivi u bva kha vhabebisi vha fusumbenthihi (71). Nga tshenetsho tshifhinga tshithihi, ho dovha ha shumiswa thekiniki ya tsumbonanguludzwa hu na zwo sedzwaho kha kuitele kwa khwaḽithethivi na vhashumi vhavhili (2) vha OHS na vhabebisi vha 13. Data yo kuvhanganywa nga kha mbudzisambekanywa na inthaviwu hune mbuno dza tea sumbedziswa. Data ya khwanthethivi yo saukanywa nga vesheni 24 ya SPSS, musaukanyo wa u wana thero wo shumiswa kha u kuvhanganya na u saukanya khwanthithethivi.

Mvelelo: Yuniti dza vhaimana ndi vhupo ha kiḽinikhaḽa vhu re kha khohakhombo khulwane. Vhabebisi vha na nḓivho yavhuḓi nga ha PEP fhedzi vha a tendelwa u tevhedza lwo linganaho nyendedzi. Ngudo yo wanulusa u kundela u vhigwa ha zwiwo zwa u ṱanea kha malofha na maḓitsireledzi na u sa shumiswa ha tshumelo dza PEP. U ya nga vhadzheneli, kuitele kwa u wana PEP nga murahu ha u ṱanea ku a netisa, u ya nga vhadzheneli. Ndi ngazwo vhaṅwe vha tshi takalela u ṱoḓa tshumelo dza PEP huṅwe fhethu. Kha ngudo heyi ho bveledzwa zwiṱirathedzhi zwa u khwinisa u tevhedza.

Magumo na themendelo: Zwiwo zwi re nṱha zwa u ṱanea kha zwiluḓi zwa malofha na muvhili zwi fanela u langulwa nga nḓila yo teaho nga kha u dzhenelela ho ḓivhadzwaho. U khwaṱhisa nḓivho nga ha nyendedzi dza HIV PEP na zwilinganyo zwa u thivhela nga kha vhugudisi vhu yaho phanḓa tsho vha tshiṅwe tsha zwiṱirathedzhi zwo bveledzwaho kha ngudo**.**

Maipfi a ndeme: u ṱanea mushumoni, vhabebisi, tsireledzo na mutakalo mushumoni, u nwa mushonga u thivhela HIV nga murahu ha khonadzeo ya u ṱanea, nyendedzi, zwiluḓi zwa malofha na muvhili, tshiedziswa tsha u tevhedza ndingo, vairasi dzi kulaho nungo dza maswole a muvhili, zwilinganyo zwa u thivhela, u sa vhigwa

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ART	Antiretroviral Treatment
ARV	Antiretroviral
BBFs	Blood and Body Fluids
CDC	Centre for Disease Control
EAP	Employee Awareness Programme
HCWs	Healthcare Workers
HIV	Human Immunodeficiency Virus
IPC	Infection Prevention and Control
IOD	Injury on Duty
DoH	National Department of Health
NSSIs	Needle Stick and Sharps Injuries
OSHA	Occupational Safety and Health Administration
OBBFE	Occupational Blood and Body Fluids Exposure
PPE	Personal Protective Equipment
PEP	Post Exposure Prophylaxis
SP	Standard Precautions
WHO	World Health Organisation

CHAPTER 1

ORIENTATION TO THE STUDY

1.1. INTRODUCTION

This chapter presents an outline of the entire study. The units of discussion include the study background; description of the study problem; purpose and objectives; research questions; study approach and design; the significance of the study; definition of key concepts; ethical considerations; organisational structure of the study, and finally, the conclusion.

Frontline healthcare workers (HCWs) remain susceptible to occupational exposure to infections while performing their routine duties. About 90% of these occupational exposures are reported to be occurring in the developing world (Ismail, Awan, Naeem, Siddiqui, Afzal, Jamil & Khan 2018:1). The (ibid) goes further to indicate that this is because of lack of awareness and structured training in relation to prevention and management of accidental exposures. According to Rasweswe and Peu (2020:1), all categories of nurses are continually affected by accidental occupational exposure to blood and body fluids (BBFs).

Antiretroviral (ARV) medications have been used for postexposure prophylaxis (PEP) in healthcare workers (HCWs) who have been exposed to HIV at work since the early 199 0s (Eticha & Gemeda 2019:1). Even with the increased danger of exposure, there is still a clear lack of reporting and non-compliance with PEP (Suglo, Akua, Anaman-Torgborb & Tarkang 2021:212).

1.2. BACKGROUND

Exposure to bloodborne infections in the workplace through blood and bodily fluids is a significant public health concern. An estimated 5.6 million healthcare professionals and those in associated professions are at risk of different occupational risks, according to the Centers for Disease Control and Prevention (CDC) (Palenik 2017:15).

Clinical healthcare workers will inevitably encounter human blood and body fluids (BBFs) in the course of their work. Due to the nature of their work, midwifery practitioners are constantly in contact with BBFs. To mitigate the risks, the World Health Organisation (WHO) guidelines (2013) and the South African National Department of Health guidelines (DoH) (2016) introduced universal precautions strategies and interventions to prevent exposure to BBFs (Peu & Rasweswe 2020:2). Despite the availability of these universal precautions, healthcare providers still experience accidental exposures. Ademe, Mohammed and Edmealem (2020:33) allude to the fact that there is an increase in the prevalence of Human Immunodeficiency Virus (HIV) exposure of HCWs.

All those who are exposed to HIV should be provided and started on HIV PEP as soon as possible, ideally within 72 hours (WHO 2021:88). The source's HIV status should be the basis for determining eligibility, and if at all feasible, the background, prevalence, and regional epidemiological patterns should also be considered.

According to Shitu, Adugna and Abebe (2021:2), in Africa, there are two to four needlestick injuries for every healthcare worker annually. The authors indicate that Nigeria, Tanzania and South Africa (SA) report an average of 2.10 injuries per healthcare professional per year. Palenik (2017:15) indicates that a percutaneous injury with a contaminated sharp, particularly a hollow needle in a vein or artery of an HIV positive patient, poses the greatest risk of HIV infection. Shakeel, Iffat, Naseem, Nesar, Rehman, Yaqoob, Rehman, Barrak, Jamshed and Gajdacs (2022:2) add that percutaneous contact with HIV-infected blood or mucous membranes carries an estimated 0.3% and 0.09% risk of HIV acquisition, respectively. While there is a risk for all health professionals, nurses and midwives are more likely to sustain needle stick and sharps injuries (NSSIs), which can range from 50.7% to 72.6% (Getie, Wondmieneh & Tesfaw 2020:188). Maternity staff are exposed to amniotic fluid, vomitus, blood, urine, faeces, sweat, vaginal secretions and breastmilk daily (Strong 2018:273).

Factors which influence the risk of occupational infection

According to Shakeel et al. (2022:2), the likelihood of HIV transmission during an occupational exposure is contingent upon several factors, including the source's blood's viral load, the type of injury, the volume of body fluid or blood exposed to, and the exposed

healthcare professional's immune state. Bareki and Tenego (2018:2) add that Injuries caused by hollow-bore needles are the most common type of infection; additional risk factors include the severity of the injury, obvious blood contamination, and procedures where a needle is inserted directly into the vein or artery of the source patient, among others. The number of patients who present with the infection within the facility and the safety measures that healthcare workers take when providing patient care determine the amount of risk (Ademe et al. 2020:32). In addition, nurses and midwives have repeated exposure due to extended working periods, not observing standard precautions by omitting to wear personal protective equipment (PPE), lack of experience and inefficient application of infection prevention guidelines (Getie, Wondmieneh & Tesfaw 2020:187). HIV PEP must be administered to individuals who have been exposed to certain types of bodily fluids, including but not limited to blood, blood-stained saliva, breast milk, vaginal secretions, cerebrospinal fluid, amniotic fluid, peritoneal fluid, synovial fluid, pericardial fluid, and pleural fluids, according to WHO guidelines (2021:89). The risk of contracting HIV is considerable with these fluids. Other types of exposure that pose a significant risk are mucous membrane, splashes to the eye, nose, or oral cavity and parenteral exposures. Despite increased occupational hazards in healthcare settings, there are poor adherence to practice guidelines and poor motives among healthcare workers to protect themselves from HIV exposure, evidenced by low utilisation of HIV PEP (Degavi, Adola, Panari, Pawar & Dereso 2020:2).

Impact of occupational exposure to HIV on healthcare professionals

Alitubeera, Mutanda, Aggrey, Kobusingye, Biribawa, Tusubira, Eyu and Kiwanuka (2021:2) assert that many injuries might not result in the spread of blood-borne viruses, but rather in mental health problems like anxiety, depression, post-traumatic stress disorder, and dread that limit one's career. Moreover, the dearth of human resources for health in poor nations may be significantly influenced by people's fear and anxiety about contracting infectious diseases.

Mitigating the risk of occupational exposure to BBFs

The nature of midwifery practitioners' work is inherently risky in terms of inevitable exposure to BBFs. During the prenatal, labor, and postpartum phases, midwives must

take safety precautions while handling a patient's blood or body fluids. Abere, Yenealem, and Wami (2020:1) argue that the HCWs' safety and wellness are impacted by the occupational risk of BBF exposure and needle stick injuries, which also has a detrimental impact on the standard of care provided. Palenik (2017:17) emphasises that mitigation of occupational exposure is the most critical strategy for lowering the chances of acquiring HIV infection at the workplace. Using personal protection equipment (PPE) to shield HCWs from direct contact with blood and body fluids is a long-standing practice that is strictly adhered to and lobbied for in these contexts (Aigbodion, Motara & Laher 2019:5). HCWs should be adequately informed on HIV PEP since it will guide their post-exposure actions (Kabotho & Chivese 2020:2). Degavi et al. (2020:6) assert that the most measure to prevent occupational HIV transmission is to strictly adhere to the use of HIV post-exposure prophylaxis.

Implementation of PEP Guidelines

Post-exposure prophylaxis to prevent HIV infection was introduced in the early 1990s when there was a very low coverage of the HIV population with antiretroviral treatment (ART) (Mushambi, Timire, Harries, Tweya, Goverwa-Sibanda, Mungofa & Apollo 2021:559). The WHO recognises, recommends, and circulates HIV PEP guidelines as an essential instrument for preventing occupational HIV infection and thus, has proven to be an effective and ethical method of prevention among HCWs. (Rasweswe & Peu 2020:2). Furthermore, The WHO's HIV PEP guidelines, developed in 2014, offered a more straightforward approach to PEP delivery. Owing to the poor rates of PEP uptake and completion, the guidelines sought to harmonize HIV PEP recommendations with ARV medications that are accessible in low and middle-income countries. In 2016, the WHO consolidated the HIV guidelines and released new guidelines pertaining to eligibility, scheduling, medication, adhering to treatment plans, support, and clinical considerations. (WHO 2021:88).

South Africa's National Clinical Guidelines for PEP in occupational and non-occupational exposures (2020) emphasise that post exposure prophylaxis should be made available and started by all individuals either immediately after exposure or within 72 hours of the exposure, and medication should be taken for 28 days (DoH 2020:6). In addition, side

effects must be tracked and treated appropriately to encourage adherence. Rasweswe and Peu (2020:2) assert that PEP is a prophylactic intervention that entails adhering to guidelines and finishing a post-exposure management program.

1.3. CONTEXT OF THE STUDY PROBLEM

In the last ten years, published studies from African countries reported a lack of knowledge and inadequate use of PEP following occupational exposure to HIV amongst HCWs and nursing students. Studies further reveal that this is made worse by inadequate follow-up and lack of HIV testing after the completion of treatment (Mushambi et al. 2021:560). Bareki and Tenego (2018:2) highlighted that, PEP medication lowers the risk of HIV infection by 81% when given soon after exposure. According to Mushambi et al. (2021:559), while PEP acceptance was prompt and widespread in Zimbabwe, few HCWs attended follow-up HIV testing, and the majority of HCWs did not finish the 28-day medication course. A study by Rasweswe and Peu (2020:4) found a notable discrepancy between the HIV PEP recommendations and the nurses' and midwives' application and practice in one Gauteng hospital in the Tshwane district. The (ibid) further assert that 54% hospital nurses did not disclose exposures in accordance with the guidelines.

South Africa (SA) initially implemented PEP in the public sector in 2002 (DoH 2020). Although some studies report favourable knowledge, there remains a knowledge gap among HCWs (Eticha & Gemeda 2019:1). The results from the study conducted among nurses at the Tygerberg Hospital in the Western Cape of SA reveal that the 17 individuals who were occupationally exposed to HIV, 10 reported the incident and were put on PEP programme, and only 6 completed the treatment (Kabotho & Chivese 2020:1). Consistently, the research study conducted among trainee doctors in the four hospitals in the Gauteng province of SA, reported initiation of PEP amongst 77.5% of exposed respondents, which was subpar in an environment where HIV is widespread (Aigbodion, Motara & Laher 2019:5). The (ibid) further indicates that the additional factors contributing to the undesirable commencement of PEP were a lack of understanding and a lack of stringent enforcement and training about PEP guidelines.

According to Rasweswe and Peu (2020:2), despite the widely circulated national PEP guidelines in SA, this remains a challenge among some nurses caring for patients with HIV. The authors further indicate that poor knowledge about PEP makes HCWs not seek help when the need arises. From the above background, it is evident that HCWs still struggle with inadequate awareness and adherence to HIV PEP. Bianchi, Belingheri, Nespoli, De Vito and Riva (2019:245) argue that occupational risks are frequently understated in health facilities, particularly in intrapartum and postpartum care attendance. Even though midwives are constantly exposed to risks, there is not much research on the risks associated with their duties. Reviewed literature presents less evidence on investigations or research conducted among midwifery practitioners exclusively on implementing PEP guidelines in the obstetric units; hence it was vital for the researcher to study the trends for this cohort. The aim of this study was to develop strategies to improve midwifery practitioners' compliance with the PEP guidelines.

1.4. STUDY PURPOSE AND OBJECTIVES

The purpose of the study was to develop strategies to improve compliance with Post Exposure Prophylaxis guidelines for midwifery practitioners in Gauteng province, South Africa.

1.4.1. Research Objectives

- To determine the utilisation and uptake of HIV PEP among midwifery practitioners in the selected hospitals.
- To explore the experiences of midwifery practitioners and occupational health and safety practitioners on compliance regarding the PEP guidelines.
- To assess the knowledge, attitudes, and perceptions of midwifery practitioners regarding PEP guidelines.
- To develop strategies to improve compliance with post exposure prophylaxis guidelines among midwifery practitioners.

1.4.2. Research Questions

The researcher used the research objectives to develop the following research questions derived from the research problem and the purpose of the study.

- How is the utilisation and uptake of HIV PEP among midwifery practitioners in the hospital?
- What are the experiences of midwifery practitioners and occupational health and safety practitioners regarding compliance with PEP guidelines?
- What is the knowledge, attitudes, and perceptions of midwifery practitioners regarding PEP guidelines?
- What strategies could be applied to improve compliance towards PEP guidelines among midwifery practitioners?

1.5. RESEARCH PARADIGM

Paradigms for human inquiry refer to ways in which people respond to fundamental philosophical questions (Brink et al. 2018:19). Polit and Beck (2017:578) suggest that the paradigm associated with mixed methods is pragmatism due to its practicality. The researcher followed the pragmatism research paradigm, which embraced a plurality of methods, positivist and interpretivism positions. Pragmatism is a research paradigm that is predicated on the notion that investigators ought to employ the research techniques and strategies that are most effective for the research challenge they are tackling (Kaushik & Walsh 2019:16). The positivist paradigm promotes the use of quantitative research techniques as the basis for the researcher's capacity to accurately describe the variables and coefficients in the collected, examined, and analysed data (Kivunja & Kuyini 2017:31). On the other hand, the interpretivists hold that there are various realities that exist depending on how researchers define reality (Maarouf 2019:2). In this study, both paradigms assisted in responding to the objectives and set questions.

1.6. THEORETICAL FRAMEWORK

The study adopted a Compliance Assessment Model as a guide to data collection. This model, which was developed to determine the reasons behind the behaviour using the quality management systems tool, suggests that knowing the elements that influence the adoption of rules and regulations and the effects of norms will be beneficial in understanding non-compliance behaviour (Dankwa & Nakata 2018:230). The main components underpinning the model are quality management tools, staff attitude,

community (staff), division of labour (routine duties), perceived usefulness of tools, perceived ease of use of the tool, behavioural intention, and actual behaviour (as indicated in Figure 1.1). The rationale for the model was to study HWCs' attitudes, behaviour, and compliance towards PEP guidelines. The focal tool was the PEP guidelines. The researcher used the guidelines to ask the participants questions related to their attitudes and behaviours towards the PEP programme, their knowledge of PEP guidelines and their level of compliance.

The model accommodated the objectives set for this study, which basically examined and explored midwifery practitioners' knowledge, attitudes, and compliance towards post exposure prophylaxis guidelines. As a blueprint, the model directed the researcher to develop research objectives and questions, further shaping data collection methods and analysis. Integration of the theoretical framework was done through the research process, namely the development of the research questions, the conceptualisation of the literature review, the design approach, and the data analysis plan of the study (Grant & Osanloo 2014:12).

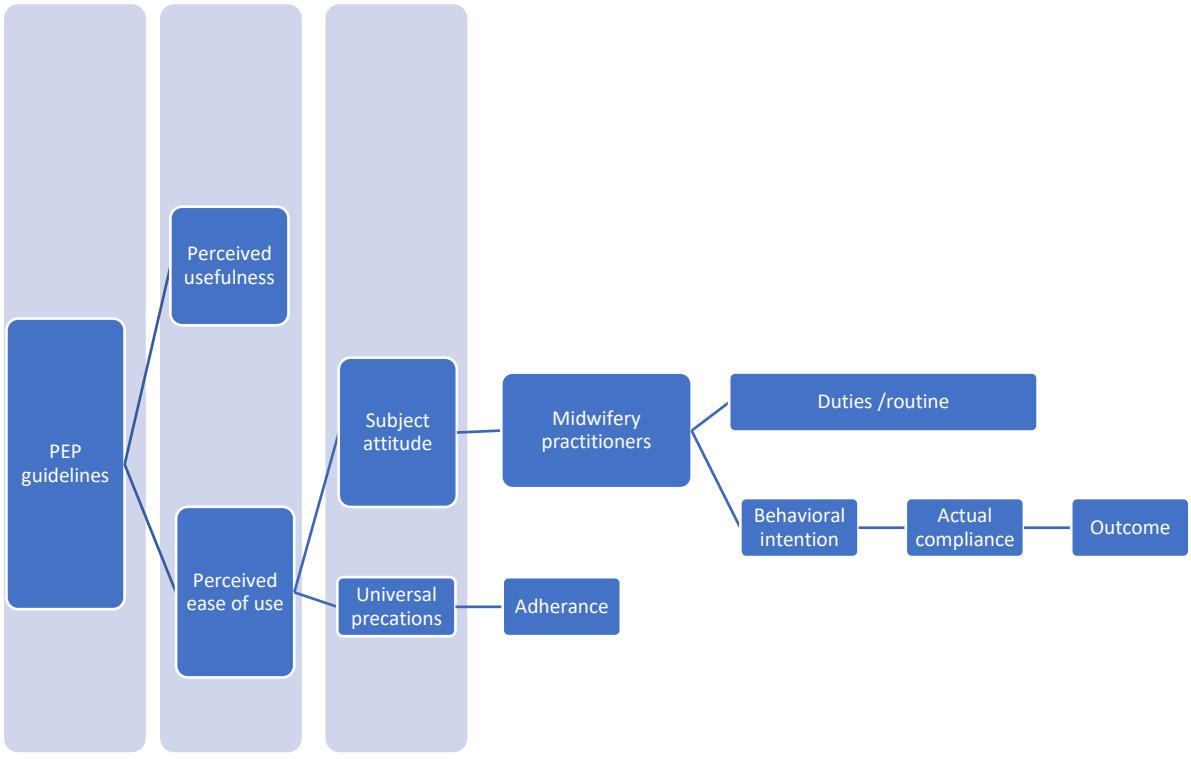

Figure 1.1. Compliance Assessment Model (CAM) Dankwa & Nakata (2018)

1.7. STUDY APPROACH AND DESIGN

1.7.1. Study Approach

The researcher followed a concurrent mixed methods research approach. Accordingly, the selected method entails the analysis of quantitative and qualitative strands and, the analysis of the interaction between the two strands (Vogl 2019:537). Furthermore, the mixed method design forms a complete picture of the problem. Accordingly, mixed methods research is about increased knowledge and validity, with complementarity as one of the defined aims to seek clarity, elaboration, and enhancement of the results (Schoonenboom & Johnson 2017:110).

The primary participants in the study were midwifery practitioners. However, the researcher also included occupational health and safety practitioners as the source of information to seek elaboration and clarification regarding the presumed problem. This was consistent with Barnes in Maarouf (2019:4) in the description of a "concurrent nested design" wherein one primary research method is used, and the other is used for various objectives, including addressing a different research subject or concentrating more on a smaller subset of a larger group. The study consisted of at least one qualitative research objective and question, which required interviews with some participants, while the other three questions took a quantitative form and were answered through a questionnaire. The study was conducted concurrently and independently as qualitative and quantitative strands. The process is unpacked in Chapter 3.

1.7.2. Study design

Qualitative and quantitative study designs were conducted separately but concurrently. The study was not dependent on the findings of either one of them to carry on. The two methods were rather validating each other. The results of two different analyses were combined to create a synthesis and provide a general interpretation (Polit & Beck 2017:591). In this study, the qualitative results were expected to be primarily complementary as conducted mainly with the OHS practitioners. The exploration of the experiences of midwifery practitioners was an expansion of data shared on the quantitative method.

1.7.2.1. Qualitative research design

A descriptive phenomenological method was followed for the qualitative study. Leigh-Osroosh (2021:1817) explains that descriptive phenomenology is concerned with investigating individuals' experiences of phenomena as they come into consciousness. This design responded to the set objective which aimed to investigate the lived experiences of midwifery practitioners and occupational health and safety practitioners on implementing the post exposure prophylaxis treatment for HIV.

1.7.2.2. Quantitative research design

To obtain precise results, the quantitative research approach quantifies and analyses variables. It entails the use of statistical approaches to analyse numerical data to provide answers to queries such as who, what, where, when, how many, and how much (Apuke 2017:41). Non-experimental quantitative research with a cross-sectional descriptive design was conducted. In non-experimental research, the researcher does not interfere by changing the independent variable (Polit & Beck 2017:203). Polit and Beck (2018:228) suggest that statistical analysis is used in quantitative for three main purposes: description of data, hypotheses testing, and supplying proof of the measurement aspects of quantified variables.

Descriptive research seeks to characterize, clarify, or validate a hypothesis or goal related to a particular population (Sahin & Mete 2021:23). To synthesize and describe the data, the researcher employed descriptive statistics (Polit & Beck 2018:229). Descriptive research, according to Sahin and Mete (2021:28), is a quantitative research technique that aims to gather quantifiable data for statistical analysis of the population sample. Typically, it is a cross-sectional study in which various segments of the same group are examined.

Cross-sectional studies seek to collect trustworthy data that allow the researcher to draw strong conclusions and develop fresh hypotheses that will spark interest in more research (Zangirolami-Raimundo, Echeimberg & Leone 2018:356). Moreover, cross-sectional studies are helpful for determining the prevalence of a phenomenon in each community, regardless of whether it is thought to be the source, the effect, or both (Raimundo et al. 2018:257). In this context, the researcher evaluated the implementation of the existing

PEP guidelines when exposed to human blood and body fluids by assessing participants' knowledge, attitudes, and awareness.

1.7.3. Integration of findings

To analyse the data and provide a comprehensive explanation, the findings from two independent analyses were integrated (Polit & Beck 2017:591). The researcher adopted the data analysis process described by Onwuegbuzie and Teddlie in Vogl (2019:539). The steps included data reduction, data display, conversion of quantitative data into qualitative data and data correlation, followed by data consolidation, interpretation, and integration. After analysing quantitative data with the final presentation of the results through a descriptive format on an Excel spreadsheet, the results from the qualitative analysis were compared for any similarities before integration was achieved. In this study, the qualitative results were mostly complementary as they were conducted mainly with the OHS practitioners. The exploration of the experiences of midwifery practitioners was an expansion of data shared on the quantitative method.

1.7.4. Development of strategies

The findings were used to develop strategies which could be reliable and easy to follow to manage occupational exposure to human blood and body fluids and mitigate the probability of HIV infection at work. To design the implementation strategies, the researcher adopted four steps from the six-step intervention mapping as described in Fernandez, ten Hoor, Lieshout, Rodriguez, Beidas, Parcel, Ruiter, Markham and Kok (2019:2). The steps included: (i) problem analysis and identification of what needed to be changed; (ii) development of matrices of change objectives; (iii) selection of theory-based interventions and translated into strategies; lastly (iv) integration of strategies into an organised program.

1.7.4.1. Validation of strategies

The researcher used a Delphi technique to identify and recruit experts from relevant fields to validate the strategies. The Delphi technique's goal is to create an expert-based opinion about an epistemic question, based on the theory that a group of experts and a plurality of expert-based suggestions will yield a more reliable conclusion than a single expert's opinion (Niederberger & Spranger 2020:1). The whole approach is built on a sequence of

'rounds', where the experts are asked for their thoughts on a particular issue (Barrett & Heale 2020:68). A panel of experts in the field of occupational health and safety (OHS), quality, infection prevention and control (IPC) and HIV/AIDS management were identified to participate in the validation of the strategies to improve compliance to PEP guidelines for midwifery practitioners in the Gauteng province of SA.

1.8. STUDY SETTING, POPULATION AND SAMPLING

1.8.1. Setting

Brink, van der Walt and van Rensburg (2018:47) define research setting as the location or locations from where the data are gathered. The researcher used the non-probability purposive sampling method to select the three hospitals in the Tshwane District of the Gauteng Province to conduct the study. The hospitals were of three different levels of care, i.e., district, regional and tertiary. The type and level had no significant value in determining the site sample for the study. The researcher focused on the maternity units at the selected hospitals; hence, the results cannot be generalised to other settings.

1.8.1.1. Characteristics of the selected study sites

District hospital

The district hospital has 103 beds which is situated in the central city of Tshwane, with feeder population coming from around the City of Tshwane. Of the 103 beds, the maternity department constitutes about 39 beds (19 in the labour ward and 20 postnatal beds, no neonatal intensive care units). All low-risk maternity cases are managed at this level of care.

Regional hospital

The hospital is situated about 20 km east of the city centre of Tshwane in a township and is a referral for all surrounding primary health care facilities and the district hospital. There are 64 maternity beds (22 in the labour ward, 42 post-natal beds and over 40 NICU beds). The hospital caters for both low-risk and high-risk maternity patients.

Provincial tertiary hospital

The hospital is situated 12 km west of the city centre of Tshwane. Due to its level of care and speciality skills mix, all high-risk maternity conditions are referred to and managed in this hospital.

1.8.2. Population

Elfil and Negida (2017:1) define a population as a group of individuals with similar attributes or a condition. The population consisted of registered midwifery practitioners working in the maternity units and at least one occupational health and safety practitioner from each selected hospital in the Tshwane District of Gauteng Province.

1.9. SAMPLING

1.9.1. Quantitative strand

The researcher followed a probability sampling method in selecting the setting and population for the proposed study. Creswell and Plano Clark (2011) in Palinkas, Horwitz, Green, Wisdom, Duan and Hoagwood (2015:2) emphasise that this approach entails locating and selecting people who have extensive knowledge or experience with a particular phenomenon of interest.

1.9.2. Quantitative sampling technique

A simple random sample method was utilised to select the study population, where the researcher drew a random sample of the desired size of midwifery practitioners from the staff roster with an assurance that the likelihood of sample bias was avoided (Polit & Beck 2018:164). This method is employed when the entire population is reachable, and the researchers have a list of every subject in this target population (Elfil & Negida 2017:1). All registered midwifery practitioners who have been working in the maternity units for over three months participated in the study. The purposive non-probability sampling technique was used to select occupational health and safety practitioners, considering that only one was required from each of the selected hospitals for the study.

1.10. QUALITATIVE STRAND

A purposive non-probability sampling technique was used to sample the occupational health and safety practitioners. This is a sampling method where the researcher only chooses individuals who, in their opinion, meet the study's objectives (Obilor 2023:4). The study required one occupational health and safety practitioner from each selected hospital to clarify and corroborate the data regarding the implementation of PEP guidelines and compliance thereof. A few other midwifery practitioners were drawn from the quantitative sample frame through the nesting approach for telephonic interviews to explore further their experiences about the PEP guidelines.

1.11. SIGNIFICANCE OF THE STUDY

The degree to which this study adds to the specific body and field of knowledge pertaining to the phenomena under study determines its relevance. Researchers, managers of health programs, and other relevant health professionals may find this study to be very informative regarding the extent of occupational exposure to blood-borne viruses like HIV and the degree of post-exposure prophylaxis compliance. The results will direct future development and execution of successful methods for healthcare workers to follow post-exposure prophylaxis recommendations and standard precautions.

1.12. DEFINITION OF KEY CONCEPTS

1.12.1 Occupational exposure

Occupational exposure is accidental contact with blood and body fluids while performing clinical intervention and can arise from percutaneous and mucocutaneous injuries or blood contact with nonintact skin, which exposes the HCW to bloodborne pathogens such as HIV (Abere et al. 2020:1). In this context, occupational exposure is the anticipated contact with blood and body fluids among midwifery practitioners while performing their routine duties.

1.12.2. Midwifery practitioner

A midwifery practitioner is a registered nurse/midwife clinician who has mastered advanced clinical knowledge and skills, such as sophisticated decision-making

capabilities and clinical competences for expanded practice. The environment and nation in which he or she holds the necessary qualifications to practice influence the attributes. The advanced nurse/midwife practitioner is a clinical specialist with the necessary training and qualifications to practice on their own (Duma, Middleton, Dippenaar & Uys 2012:15). Midwifery practitioners are healthcare professionals equipped with skills, knowledge, and abilities to holistically care for women during the perinatal period and working at the selected study sites for this research study.

1.12.3. Occupational health practitioner

Occupational health practitioners are professionals who act in the interest of the health and safety of workers and maintain accurate records with the proper level of confidentiality to identify occupational health issues in an organisation. This comprises information about workplace surveillance, individual information about employment and health, such as past exposure to work-related hazards, and the outcomes of self-monitoring exposure to work-related risks (SASOM 2016:9). In this study, an occupational health practitioner is a professional appointed in the selected healthcare setting to ensure that all employees including midwifery practitioners, are safe in their work environment and keep a record of all occupational health injuries/accidents including but not limited to contact with BBFs.

1.12.4. Post exposure prophylaxis

Post exposure prophylaxis refers to the use of short-term antiretroviral medication to lower the risk of HIV infection (Dulcie et al. 2017:2408). PEP is a comprehensive 28-day package of antiretroviral drugs provided within 72 hours following accidental exposure to HIV among midwifery practitioners, aimed at mitigating the risk for HIV sero-convention.

1.12.5. Guidelines

WHO guidelines are documents developed by the WHO offering suggestions for clinical practice or public health policy (WHO 2014:1). Clinical practice guidelines (CPGs) are instruments for standardising and executing care (Wilkinson, Wilkinson, Kredo, MacQuilkan, Mudara, Winch, Pillay & Hofman 2018:23). The (ibid) goes further to indicate that they are meant to affect clinical judgement which will have an impact on patient outcomes, health system costs and resource utilisation. In this study, guidelines are a set

of recommendations designed as a framework for the implementation of post exposure prophylaxis (PEP) in healthcare settings that are selected for this study.

1.12.6. Strategies

Implementation strategies are defined as the specific ways that implementation science forms the means of implementing and maintaining interventions. (Ross, Stevenson, Dack, Pal, May, Michie, Barnard & Murray 2018:2). In this context, a strategy is an action plan which aims to elicit a behaviour change to achieve a desired goal.

1.13. ETHICAL CONSIDERATIONS

Human subjects in research have an integral function as data sources. Researchers have a duty to guard research participants' right to privacy, autonomy, and integrity, as well as to "avoid harm to health, dignity, and integrity" (Yip, Han & Sng 2016:684). The ethical principles considered in this study are discussed in depth in Chapter 3: permission to conduct the study, informed consent, confidentiality, beneficence, non-maleficence, and autonomy.

1.14. ORGANISATIONAL STRUCTURE OF THE STUDY

The chapters of the study are structured as outlined below:

Chapter 1: Orientation to the study

The chapter presents a broad overview of the entire study, covering the introduction, background, description of the study problem, purpose, objectives and research questions, and definition of critical concepts and ethical principles.

Chapter 2: Literature review

This chapter presents information from the sources of literature related to exposure to blood and body fluids of potentially HIV positive sources and post exposure prophylaxis management of the victims. The researcher reviewed relevant books, guidelines, articles/journals, and reports. Reviewing literature provided a guide in developing themes for topics of discussion.

Chapter 3: Research methodology

This chapter discusses the research design, data collection methods and processes undertaken in this mixed method study. The two methods were discussed separately in the chapter for a more precise display of how the two processes were conducted. The chapter includes an explanation of the research population and sampling methods. Data collection is aligned with the theoretical framework.

Chapter 4: Analysis, presentation, description, and discussion of the research findings

Narrative statements from the qualitative findings and statistics from the quantitative findings were analysed separately and ultimately integrated to produce a combined set of results. Qualitative and quantitative findings were integrated and discussed in this chapter, forming the basis for developing strategies to improve compliance with PEP guidelines for midwifery practitioners in the Gauteng province of SA.

Chapter 5: Integration of findings and development of strategies

In this chapter, the integrated findings were applied to the Compliance Assessment Model, which underpinned the data analysis of this mixed method study. Derived from the qualitative and quantitative data interpretation and analysis, strategies to improve compliance to post exposure prophylaxis guidelines for midwifery practitioners were developed and presented. A panel of experts in OHS, quality, IPC and HIV/AIDS management were involved in validating the strategies.

Chapter 6: Conclusion and recommendations

This chapter marks the wrap of the study, wherein conclusion discussions related to the study findings were made. Recommendations based on the results were presented in this final chapter.

1.15. CONCLUSION

This chapter presented an introductory part of the study, which briefly touched on the units that will be discussed in depth in the following chapters as outlined. The next chapter presents in detail the literature review relevant to this study.

CHAPTER 2

LITERATURE REVIEW

2.1. INTRODUCTION

A review of the literature is a crucial step in the research process. To advance knowledge, researchers need to assess pertinent literature, comprehend the scope and complexity of the body of work that has already been done, and pinpoint research gaps (Xiao & Watson 2019:93). A literature review is a great tool for combining the results of earlier studies to demonstrate evidence at a meta-level and identify knowledge gaps where further study is needed. This is an essential step in developing theoretical frameworks and conceptual models (Snyder 2019:334). Xiao and Watson (2019:93) summarizing, analysing, and synthesizing a collection of linked material might help researchers test a certain hypothesis and/or create new theories. The researcher reviewed sources relevant to occupational exposure to blood and body fluids, the uptake of post exposure prophylaxis, and material related to research methodologies. Sources included scientific journals, textbooks, and articles from the internet. The researcher searched Google, Google Scholar and EBSCOhost to obtain relevant data.

This chapter focuses mainly on the prevalence of occupational exposures during clinical practice; HIV related occupational hazards in the maternity units; clinical practice guidelines (IPC and PEP); the role of occupational health and safety in healthcare settings, and challenges with PEP.

2.2. PREVALENCE OF RISK FOR HEALTHCARE WORKERS' OCCUPATIONAL EXPOSURES DURING CLINICAL PRACTICE

Healthcare professionals continue to face challenges due to occupational exposure to blood and body fluids, which presents a substantial risk for the spread of illnesses such hepatitis B, hepatitis C, and HIV (Beyamo et al. 2019:2). Because of their occupational exposure to BBFs, HCWs are thought to be at a higher risk of infection, especially in situations when occupational health and safety procedures, infection prevention and control, and management are not implemented appropriately (Adetoun, Olanrewaju,

Temidayo & Oluwasayo 2021:44). Due to their frequent contact with biological materials and patient body fluids, HCWs are very susceptible to contracting a variety of diseases spread by bloodborne pathogens (Yasin, Fisseha, Mekonnen & Yirdaw 2019:2). Patients with different disease and infection profiles present in the healthcare facility requiring assistance. The prevalence of HIV exposure among HCWs worldwide and in developing countries is inadequately documented (Suglo, Aku, Anaman-Torgbor & Tarkang 2021:208). According to Yasin et al. (2019:5), HCWs' exposure to BBFs has put them at risk for a variety of bloodborne infections, which influences their health and the quality of healthcare in many countries, especially developing ones.

Percutaneous injuries are common among HCWs workers across all specialties, with the nursing profession having the highest incidence of these injuries (Cao, Cao, Gu, Li, Li, Luo, Liu, Jiang, Li & Cao 2020:422). The risk of BBF exposure may be higher in developing countries such as SA due to greater prevalence of bloodborne infections (Chetty, Govender & Sobuwa 2022:97).

Nurses and midwives have perpetual exposure due to extended working periods, not observing precautions by using PPE, lack of experience, and inability to apply infection prevention guidelines (Getie, Wondimieneh & Tesfaw 2020:187). Akagbo, Nortey and Ackumey (2017:2) suggest that Insufficient or no supplies, subpar safety procedures, inadequate training, ignorance of the repercussions of risky infection control methods, and inadequate organizational support for safe practices are the main causes of non-compliance with safety principles. The greatest preventative measures include following standard precautions, receiving frequent training on handling of sharps, and educating healthcare workers about blood-borne infections (Jakribettu, D'souza, Pinto, Surlu, Boloor & Baliga 2017:836).

The CDC estimates over three million HCWs in the United States (US) are exposed to BBFs annually via sharps injuries as well as mucocutaneous injuries (Shitu, Adugna & Abebe 2021:2). Research on occupational risk from the US and Europe indicates that less than 1% of HIV cases among healthcare professionals are acquired while on the job (WHO 2018:8). Occupational hazards in healthcare settings appear to be inevitable in some cases. In determining the feasibility of implementing effective control solutions to

occupational hazards, a hierarchy of controls (Figure 2.1) has been used. The hierarchy places controls in order of potential effectiveness, with the removal of a hazard ranking first and personal protective equipment (PPE) at the bottom, whose efficacy depends on its proper and regular usage (Reddy et al. 2019:66). In the maternity unit, the elimination of hazards will not be achieved due to the nature of labour processes. Blood and body fluid exposure is a component of the processes and results of labour. On the hierarchy of controls pyramid, personal protection equipment is ranked as the least effective mechanism to control risks.

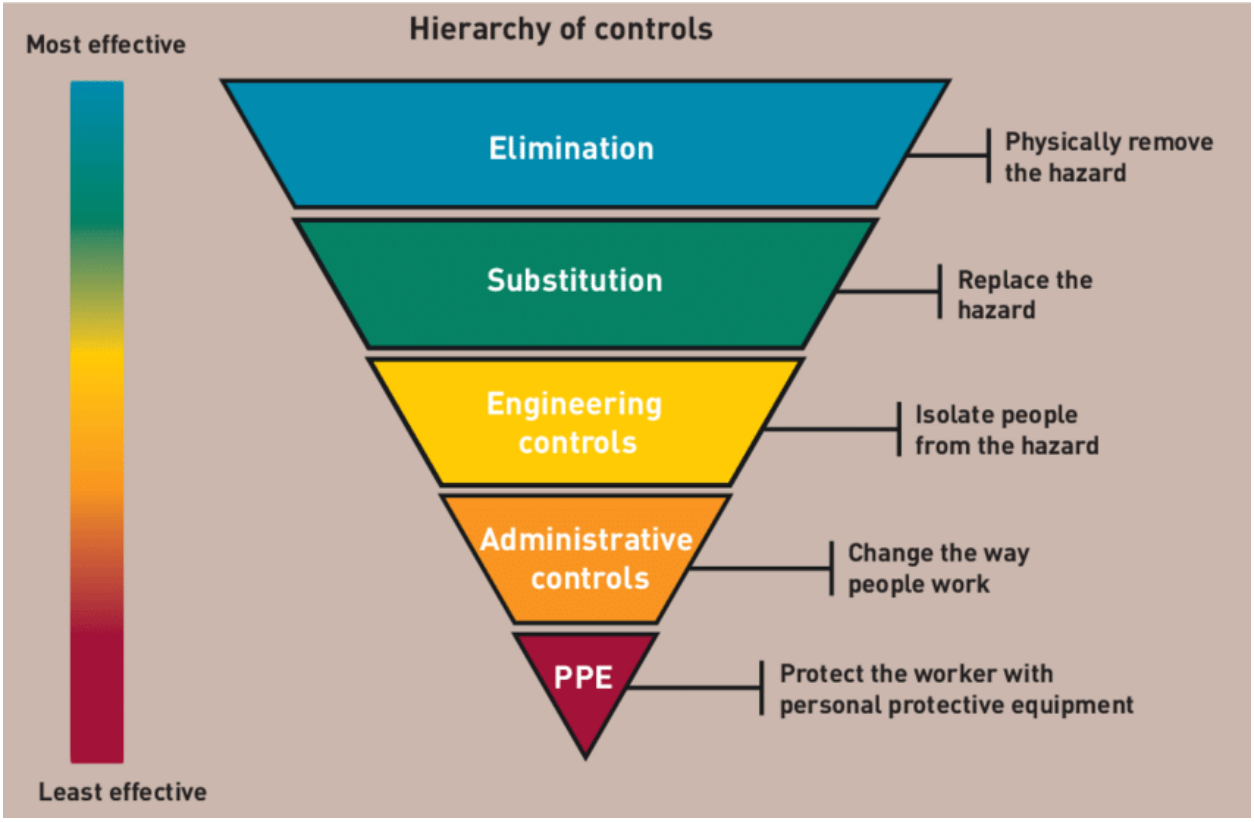

Figure 2.1. Hierarchy of controls for occupational hazards (Source: Centres for Disease Control and Prevention, National Institute for Occupational Safety and Health 10)

2.2.1. Diseases associated with occupational hazards in Sub-Saharan Africa

Even though all HCWs face workplace risks, higher rates of exposure to infections are predominantly noted among workers in sub-Saharan Africa than workers in developed

countries (Mossburg, Agore, Nkimbeng & Commodore-Mensah 2019:1). Numerous issues, such as inadequate funding, inadequate data collection techniques, inadequate oversight of adherence to safety regulations, inadequate policy implementation, and a lack of political commitment, can be attributed to the lack of occupational health in these developing nations (Tawiah, Baffour-Awuah, Appiah-Brempong & Afriyie-Gyawu 2022:2).

HCWs are frequently at risk of exposure to other highly infectious pathogens such as tuberculosis (TB), influenza, HIV and Hepatitis B (Rai, El-Zaemey, Dorji, Rai & Fritschi 2021:1). Sub-Saharan Africa bears a disproportionate burden compared to industrialized countries, as evidenced by the incidence of HBV, HCV, and HIV among healthcare workers who sustain sharp injuries (Mossburg et al. 2019:1). These diseases are also widespread throughout sub-Saharan Africa. Blood-borne pathogen infections put HCWs at significant risk (Mengistu & Tolera 2020:2). Tawiah et al. (2020:2) add that psychosocial risks like burnout, stress, and aggression, as well as musculoskeletal illnesses and injuries, are also encountered in the workplace. The most current and well-known example is the continuing COVID-19 pandemic, which has highlighted the susceptibility and highlighted how crucial it is for HCWs to implement preventive safety measures (Rai et al. 2021:1).

2.3. HIV RELATED OCCUPATIONAL HAZARDS IN THE MATERNITY UNITS

There is not enough attention given to occupational risks faced by midwives during intrapartum and postpartum care in hospitals, evidenced by very few studies on work-related risks among midwives even though they are continually exposed (Bianchi, Belingheri, Nespoli, De Vito & Riva 2018:245). The focus of midwifery duty is the conduction of deliveries in which they are more susceptible to fluids and blood splash as there is direct exposure to amniotic fluid, meconium, blood, vomiting, etc. (Shitu et al. 2021:2). Furthermore, Abukhelaif (2019:2) points out that midwives continue to be susceptible to a significant risk of acquiring hospital-acquired infections because their routine activities involve blood and body secretions.

The risk inherent in working as a midwifery practitioner includes routine blood and body fluids exposure. Furthermore, when a woman is pushing or in the middle of a contraction,

amniotic fluid may splash or spray across a large area (Strong 2018:273). The untimely and unguarded splash of amniotic fluid could catch the midwifery practitioner unprepared. In addition, Bianchi et al. (2018:246) allude to the fact that when supporting HIV-positive women, it is important to consider the high frequency of direct contact with blood or amniotic fluid, facial splashes, and needlestick injuries as key risk factors for infection.

The fact that nurses and midwives in Southern Africa work in an atmosphere that is unsupportive and intrinsically stressful adds to the overwhelming weight that the HIV epidemic has placed on them (WHO 2018:9). Chilaka, Hassan and Konje (2020:84) assert that the second-highest number of healthcare injuries among specialties is seen in obstetrics and gynaecology, which handles potentially infected bodily fluids such as amniotic fluid, peritoneal fluid, vaginal secretions, and seminal plasma. According to Nwankwo, Odo, Eze, Ezeome and Umeh (2020:196), percutaneous injuries can cause everything from death to long-term illnesses to psychological anguish. Furthermore, bloodborne pathogen exposure at work, especially HIV, can cause crippling or fatal diseases; even in cases where prompt PEP is helpful, therapies have negative effects on both health and the economy (Adetoun et al. 2021:44).

Rajasekaran, Anju, Sanjeeva and Baijal (2018:128) assert that failing to take precautions when handling needles, such as recapping needles, transferring bodily fluid between containers, handling and passing needles or sharps after use, improperly disposing of used syringes, and inadequate healthcare waste management practices, may raise the risk of needle stick injuries. Many HIV-positive people worldwide, particularly in developing nations like sub-Saharan Africa, also report having high rates of occupational exposure (Beyamo et al. 2019:2).

Ngwa, Ngoh and Cumber (2018:2) allude that strict infection control measures, such as the use of safety devices, appropriate waste disposal, immunisation, and quick management of exposures, including the use of PEP, can mainly avoid infections contracted through occupational exposures. Unfortunately, the danger of occupational exposure is increased when protective equipment is unavailable and healthcare personnel refuse to utilize it when it is accessible (Akpuh, Ajayi, Adebowale, Suleiman, Nguku, Dalhat & Adedire 2020:2). Bekele et al. (2020:1) suggest keeping safety

precaution supplies readily available and accessible as well as routinely monitoring and overseeing the actions of healthcare professionals.

2.4. CLINICAL PRACTICE GUIDELINES

Clinical practice guidelines (CPGs) deal with suggestions for improving patient care that is based on the calibre of pertinent research, a comparison of the advantages and disadvantages, and value assessments of the significance of those advantages and disadvantages (Almazrou, Alfaifi, Alfaifi, Hakami & Al-Aqeel 2020:1). The foundation of a reliable, efficient, and successful health system is the decisions taken by healthcare providers about disease prevention and management (Wilkinson et al. 2018:23). Paksaite, Crosskey, Sula, West and Watson (2021:3) state that guidelines play a crucial role in simplifying complex scientific findings into suggestions that might improve the quality and outcomes of healthcare and lessen unwarranted practice variance. Furthermore, it might be difficult to put the information from CPGs into practice because it calls for adjustments to be made at the individual, organizational, and health system levels (Correa et al. 2020:2).

The implementation techniques and impediments that are consistent with guidelines determine their success (Almazrou et al. 2020:2). To achieve those changes and put effective interventions into reality, it is crucial to first identify the elements that influence the implementation of the suggestions, or the process facilitators and barriers (Correa, Lugo-Agudelo, Aguirre-Acevedo, Contreras, Borrero, Patiño-Lugo & Valencia 2020:2). Feyissa, Woldie, Munn and Lockwood (2019:2) argue that creating an implementation framework is necessary for the guideline to be implemented effectively. Programmes and materials for training that encourage the sharing and comprehension of guidelines ought to be taken into consideration (Paksaite et al. 2021:10).

In the institutional and health system context, constraints including a lack of education exist, based on the meta-review of the individual, health system, and contextual barriers and facilitators for the adoption of clinical practice guidelines (Correa et al. 2020:8). Feyissa et al. (2019:1) identified the following elements as potential influences on the recommendations' implementation: provider-related factors, institutional and practice-related factors, and guideline features.

Lack of knowledge about guidelines and familiarity with CPG recommendations are among the barriers to and facilitators of adherence to clinical practice guidelines in the Middle East and North Africa region, according to a study. Other factors include not agreeing with the CPG's suggestions, having questions about the benefits of CPGs on outcomes, favouring experience over CPGs, lacking the necessary abilities for research, effective communication, and self-learning, and lacking the drive of healthcare professionals (Almazrou et al. 2020:8). Young, Dizon, Kredo, McCaul, Ochodo, Grimmer and Louw (2020:2) suggest that the capacity to provide recommendations for the real world considers not only the facts but also aspects like acceptability and applicability in a particular setting. Almazrou et al. (2020:2) argue that straightforward, easy-to-use guidelines may improve adoption.

Numerous problems have been identified as impeding the adoption of guidelines, such as resource-related constraints, healthcare workers' ignorance of the guidelines, their incapacity to comprehend recommendations, a lack of management support, and work overload (Feyissa et al. 2019:3).

The goal to reduce expensive and avoidable errors and negative outcomes, as well as to increase the efficacy and affordability of health system consumption, has historically driven the development of CPGs (Young et al. 2020:2). Nevertheless, SA has long played a role in the creation of CPG, with key entities like the DoH, clinical professional groups, and NGOs creating guidelines for their specific constituencies. However, currently, there is no consensus on how to create, modify, or apply CPGs in a way that is both efficient and successful (Kredo, Abrams, Young, Louw, Volmink & Daniels 2017:2).

The South African Guidelines Excellence (SAGE) project conducted research on CPG development and practices, which emphasises the need to enhance CPG quality, training, development, and reporting methods with the objective of involving end users more in the CPG development process (Wilkinson, Hofman, Young, Schmidt & Kredo 2021:2). Almazrou et al. (2020:1) allude that the purpose of guidelines is to help with resource allocation, reduce unnecessary disparities in clinical practice, improve healthcare quality and safety, and establish criteria for performance evaluation. In this

study, two main guidelines are discussed, namely, infection prevention and control and HIV PEP guidelines.

2.4.1. Guidelines for infection prevention and control

Healthcare-associated infections (HAI) account for the most common adverse events occurring in health settings that are a public health concern that severely affects morbidity, mortality, and quality of life (WHO 2016:9). Effective infection prevention and control (IPC), which encompasses several operational levers, promotes the provision of safe primary care as well as the highest possible standard of healthcare (WHO 2021:1). The IPC multimodal strategy entails "creating" the appropriate framework, "educating" the appropriate material, "verifying" the appropriate material, "selling" the appropriate messaging, and eventually "living" IPC across the board throughout the health system (WHO 2018:12). In the Occupational Safety and Health Administration (OSHA) standards document for prevention of bloodborne pathogens it is also stated that “safety include engineering and work practice controls shall be used to eliminate or minimise employee exposure”, such as the use of sharps with a safety-engineered injury protection mechanism (Mengistu & Tolera 2020:2).

2.4.1.1. Standard precautions in healthcare settings

To reduce the risks of spreading diseases in healthcare settings, the CDC developed standard precautions (Nwankwo et al. 2020:195). Compliance with basic safety protocols is a cost-effective and efficient way to enhance healthcare quality and lower the rate of infections resulting from healthcare (Bekele, Ashenaf Ermias, Arega & Sadore 2020:1). Healthcare workers continue to have low compliance with standard precautions standards, which is a fundamental strategy for preventing healthcare-associated illnesses (Donati, Biagioli, Cianfrocca, De Marinis & Tartaglini 2019:1).

Accordingly, SPs are designed to lessen the chance that illnesses, such as bloodborne pathogens, may spread from known and unknown sources. However, patients and staff may act as carriers of germs, even if they are merely colonised and not showing any symptoms of infection (DoH 2020:13). SPs should always be applied for all patients to prevent HAIs among patients and healthcare professionals (Donati et al. 2019:2).

Beyamo, Dodicho and Facha (2019:1) state that SPs refer to all policies, procedures and activities that aim to prevent or minimise the risk of infectious disease transmission at healthcare institutions. The compliance rate is defined as the degree to which employees' behaviours align with the authority's directives (Donati et al. 2019:2). According to Beyamo et al. (2019:2), SPs include personal protection equipment (goggles or glasses, sterile drapes, gowns, masks, aprons, drapes, closed boots or shoes, and hand hygiene practices such as routine hand washing, hand antisepsis, and surgical hand scrub). The authors reiterate that SPs include housekeeping, clinical laboratory services, instrument processing (decontamination, cleaning, sterilisation), waste management, and the prevention of needle sticks and sharp injuries. Conditions such as the availability of materials and equipment, the manager's lack of commitment, or individual factors, such as expertise and experience, may all have an impact on compliance with SPs (Al-Faouri et al. 2021:420). According to Bekele et al. (2020:2), adherence to SPs is crucial for maintaining the standard of care and safeguarding patients, healthcare workers, and communities.

2.4.1.1. The use of personal protective equipment in the maternity units

According to Abukhelaif (2019:2), PPE primarily shields healthcare workers from harm and lessens the chance of pathogens spreading across healthcare settings. The author further indicates that it does not lessen the level of risk nor guarantee complete protection. In their job, midwives seem more likely to interact with blood (Goje, Balami, Jarma & Dauda 2018:44). As such, common precautions including hand washing, wearing PPE, using safe injection techniques, and handling potentially contaminated equipment or surfaces in the patient environment safely can reduce the risk of HAI. (Abukhelaif 2019:1). Further evidence from the (ibid) suggests that respiratory hygiene and cough etiquette, lower the chance of contracting an infection at work.

These SPs refer to routine practices employed by healthcare workers to achieve a basic level of infection control with the assumption that all blood and body substances are potentially infectious and, hence are supposed to be applied to all patients regardless of their clinical condition and infection status (Madziatera, Msofi, Phiri, Mkandawire & Comber 2020:124).

During their practice, midwives underestimate the risks associated with their work, as gloves and other proper PPE are not commonly used because they are often viewed as a barrier between them and patients (Bianchi et al. 2018:247). The maternity staff in a Tanzanian hospital emphasised the importance of wearing PPE when performing their duties, however, they reported inadequacy of supply (Strong 2018:280). The hierarchy of controls, which comprises hazard removal, the use of safer technologies, and administrative controls comprising the creation of policies on training and educating HCWs, has long been used as a technique for the prevention of BBF exposures (Mbah, Elabor & Omole 2020:1).

There is evidence that using PPE appropriately reduces disease transmission and protects staff. It is, therefore, essential that PPE is used properly (Adam, Maswime, Soma-Pillay & Matjila 2020:2). Madziatera et al. (2020:124) reiterate that, PPEs need to be easily accessible, suitably chosen, and used correctly to be effective in preventing infections. The (ibid) further emphasises that poor availability of PPEs puts the HCWs at risk of contracting hospital acquired infections.

According to a study on emergency medical service (EMS) providers conducted in South Africa, the lack of PPE, the perception that using PPE is bothersome, and the lack of time to wear PPE are the main reasons why EMS providers do not comply with or only partially comply with PPE requirements (Chetty et al. 2022:100). Some reasons why conventional precautions are not followed include that, it takes too long to put on safety equipment, that it interferes with the way of performing clinical procedures, and that there is insufficient administrative support (Nwankwo et al. (2020:205). PPE is still a crucial instrument in the fight against the spread of infections from patients to healthcare workers (Reddy et al. 2019:66).

2.4.1.2. Barriers to healthcare workers' adherence to infection prevention and control guidelines

IPC compliance is hampered by healthcare workers' ignorance of preventive measures during patient treatment as well as their ignorance of infection prevention and control (IPC) protocols (Alhumaid, Al Mutair, Al Alawi, Alsuliman, Ahmed, Rabaan, Al-Tawfq & Al-Omari 2021:2). Reddy, Valderrama and Kuhar (2019:66) state that the key to

preventing transmission is to practice SPs, such as hand hygiene and wearing personal protective equipment.

A lack of resources and time or appropriate training are some of the factors that lead to non-compliance with standard precautions, as is the ignorance of healthcare workers regarding the correct use of protective barriers (Abukhelaif 2019:2). Additionally, multiple factors contribute to SPs not adhered to. According to Bekele et al. (2020:3), these include the lack of PPEs and their accessibility, insufficient understanding of SPs, and attitudes regarding SPs. The (ibid) goes on to point out that additional factors include having a risk-taking personality, having a lower opinion of how effective prevention is, and having less support from management for safe work practices, safety performance reviews, workplace safety, assigned work locations, work categories, and HCWs' marital status.

The main issue influencing HCWs' adherence to safety measures in Nigeria, according to reports, is the absence of personal protective equipment (PPE), which is closely followed by inadequate policies and infrequent training on SPs (Maitanmi, Abdulkareem, Maitanmi, Ogungbesan & Onisile 2021:22). Nonetheless, even in situations where knowledge and comprehension seem sufficient, universal precautions are still put into practice globally, and in low-resource contexts, budgetary constraints may restrict their availability (Nwankwo et al. 2020197). HCWs are responsible for ascertaining adherence to the stipulated IPC principles.

2.4.1.3. Facilitators of adherence to infection prevention and control guidelines

The main strategy for preventing HIV and other bloodborne infections from spreading in clinical settings is to avoid occupational exposure to blood and other body fluids (Rajasekaran, Anju, Sanjeeva & Baijal 2018:125). Although HCWs' awareness of and adherence to standard precautions are crucial in lowering the risk of secondary infections, implementing standard precautions in clinical settings has been shown to be relatively challenging in practice (Al-Faouri, Okour, Alakour & Alrabadi 2021:419).

Beyamo et al. (2019:5) assert that standard precaution practice will be improved by providing pre-service training that is long enough and sufficiently time-bound to allow new employees to immediately engage with standard precautions. Fostering adherence to

standard precautions should extend beyond the individual and include behavioral, environmental, and management interventions (Al-Faouri et al. 2021:420).

2.4.2. The WHO HIV PEP guidelines

HIV remains a serious risk to global health, and pharmaceutical preventive interventions are crucial parts of the multifaceted strategy aimed at ending the infection by 2030 (Heendeniya & Bogoch 2019: e494).

According to Ford and Mayer (2015:161), the WHO's 2014 PEP guidelines suggested PEP regardless of the source of exposure to streamline eligibility determination and prescription protocols. The (ibid) further indicates that the aim was to simplify PEP prescriptions and synchronize them with ART regimens that are currently in use. These guidelines focus on preventing HIV infection by simplifying and expanding post-exposure (WHO 2014). PEP is the use of antiretroviral therapies to prevent HIV seroconversion following a single high-risk event. WHO advises that to facilitate the reporting and management of HCWs who are exposed to HIV at work, all healthcare facilities should have a readily accessible system in place that is open around the clock (Bareki & Tenego 2018:2). PEP is a proactive strategy for HIV prevention that works best when used within 72 hours of being offered (Heendeniya & Bogoch 2019: e494).

2.4.2.1. Adoption of WHO PEP guidelines across developed and developing countries

The WHO guidelines make provision for different states to refer to as a framework and to craft suitable guidelines according to their different profiles and legislative backgrounds. Although countries have adopted the guidelines, a few disparities remain in how they are implemented.

According to New York State Department of Health guidelines, the first PEP dose should be given as soon as possible, ideally within two hours of exposure and at most 72 hours after exposure (McGowan, Fine, Vail, Merrick, Radix, Hoffmann & Gonzalez 2022:3). The British Columbia HIV guidelines recommend that the 5-day starter kit be initiated within two hours and no later than 72 hours after the probable exposure incident (Montaner & Harris, 2020:3). The authors go further to state that additional facts can be sought during

the first coverage period to better determine the risk associated with the exposure. However, the DoH (2020:6) is against the provision of starter packs due to the risk of defaulting treatment. Cresswell, Asanati, Bhagani et al. (2022:3) recommend that starter packs should be eliminated since they may have a detrimental effect on PEP completion. The guidelines' development group reasoned that giving a partial prescription and requiring follow-up consultations could make groups with less access to healthcare facilities more unequally treated. Thus, after the initial risk assessment, a complete 28-day prescription of ARVs should be prescribed for HIV PEP (Ford et al. 2015:163). The Malawian clinical guidelines (2018:94) state that if an individual is exposed to an HIV-positive source and is deemed to be at "risk," they should (i) administer a three day supply of PEP and begin taking it right away; (ii) assess risk and test for HIV as soon as possible; and (iii) continue a 30-day course of ARV prophylaxis (PEP) if the individual is HIV negative.

The New York guidelines outline that the follow up should be undertaken as follows:

(i) Clinicians should follow up with the exposed person again within 48 hours, either in person or over the phone, to check on PEP compliance and tolerability and determine if they have access to the drugs needed to finish the entire 28-day PEP regimen.

(ii) A social worker or patient navigator should be contacted to investigate possibilities and help with medication access if the patient is having trouble getting the recommended PEP drugs.

Follow-up care is essential for patients on PEP therapy to monitor adverse effects and enhance adherence (McGowan et al. 2022:43). Makhado and Seekane (2020:9) assert that HIV PEP is still the best prophylaxis and the only strategy in use today for preventing seroconversion following exposure.

2.4.2.2. Eligibility for post exposure prophylaxis

The guidelines prescribe who qualifies for the post exposure prophylaxis. Accordingly, the WHO (2021:89) states that determining eligibility should be based on the source's HIV status and, if at all feasible, consider the background prevalence and regional

epidemiological patterns. Rajasekaran et al. (2018:131) argue that the actual risk of transmission is dependent on the quantity of HIV transferred, although the mean rate of HIV seroconversion following accidental blood exposure (for percutaneous exposure) is 0.3%.

Promoting the reporting of occupational exposure episodes is crucial to lowering infection rates among HCWs exposed to occupational bloodborne pathogens (Yi, Yuan, Li, Mo & Zeng 2018:9). However, there are other situations in which the exposures might not justify starting PEP, such as when the source is determined to be HIV negative, the HCW is already HIV positive, or the exposure involves body fluids that don't represent a danger (WHO 2021:89). According to Ford et al. (2015:162) starting PEP should not be restricted by the exposed person's evaluation of their HIV status or the inability to determine the source's HIV status. Furthermore, research that has been published shows that 9% of people who begin PEP are subsequently stopped as the source case is later determined to have little to no risk of HIV transmission.

2.4.2.3. The WHO on the choice of drugs for HIV PEP

The antiretroviral medications already procured should be considered when selecting an HIV PEP regimen (WHO 2021:90) The WHO's 2016 guidelines stipulate that an HIV PEP regimen consisting of two (2) ARV drugs is effective; however, three (3) drugs are recommended (WHO 2021:88). Treatment guidelines also call for giving HIV PEP patients three (3) drugs; however, in certain cases, PEP patients may only have access to two drug regimens or may not benefit from the added risk of toxicity (Ford et al. 2015:163).

WHO (2021:88) reports that the 2014 HIV PEP guidelines raised concerns about administering drugs like EFV, which are associated with HIV-related adverse effects related to the early central nervous system and mental health. Because of its effects on the central nervous system, this EFV is associated with high rates of HIV PEP discontinuation. Moreover, EFV should only be used as a third drug choice in cases where there are no other options.

International guidelines for the prevention of HIV have adopted the addition of Dolutegravir to the existing ART regimen. The regimen comprises a fixed dose combination, supposedly easing the burden of taking many drugs. Truvada is a combination of 300 mg of TDF and 200 mg of FTC that is easily taken once daily (Chilaka et al. 2020:85). Although EFV is well tolerated for treatment, its use as PEP is not as widely accepted because of concerns regarding its potential effects on the neurological system and mental health adverse events in HIV-negative individuals who may experience anxiety because of HIV exposure (WHO 2021:90). According to the revised 2021 WHO guidelines, a two-drug regimen is recommended for post-exposure prophylaxis. Still, it is recommended to use tenofovir disoproxil fumarate, lamivudine (or emtricitabine), and dolutegravir as a three-drug combination.

2.4.2.4. Implementation of the PEP guidelines in South Africa

SA is at the forefront of the HIV/AIDS epidemic, with 7.1 million people living with the disease globally (Paulse, Jooste & Majee 2020:2). The authors also indicate that the country has the most extensive antiretroviral therapy (ART) programme in the world, with emphasis on the application of the “test and treat” protocol and recommendations. Ideally, PEP is required to be taken as soon as feasible, ideally within 24 hours after exposure (DoH 2020:91). Since most SA hospitals and clinics offer HIV PEP services at no cost, healthcare workers can take advantage of them as soon as they are accidentally exposed (Rasweswe & Peu 2020:2). PEP effectiveness may also be influenced by the length of time that therapy was started, the degree of exposure risk, and potential drug resistance. These reasons suggest that PEP may never be fully effective and that it should be used in conjunction with a more comprehensive plan to prevent HIV infection and other blood-borne infections (DoH 2020:viii).

The population target for PEP guidelines

The PEP guidelines in SA are not only targeted for occupational exposures but also cover non occupational exposures. Accordingly, the PEP guideline is intended to guarantee that clinicians at all levels of care adhere to the most recent guidelines for HIV and HBV post-exposure prophylaxis (DoH 2020:ix). Non occupational exposures targeted by the

guidelines include sexual and inadvertent exposures. The Western Cape government (2020:1) states that HCWs are particularly vulnerable to contracting viral hepatitis and HIV. Furthermore, PEP guidelines and systems for reporting exposures should be readily available in all healthcare settings.

The literature reviewed on the HCWs on PEP guidelines specifically could not be found in SA, unlike with NIMART and general HIV guidelines. HIV training encompassing a variety of issues must be completed by nurses participating in NIMART training (Crowley, Mokoka & Geyer 2021:3).

2.4.2.5. Care pathway for PEP in South Africa

Accordingly, post-exposure management procedures are a crucial component of occupational safety (Rajasekaran, Anju, Sanjeeva & Baijal 2018:125). The South African National Clinical Guidelines of Post-Exposure Prophylaxis in Occupational and Non-Occupational Exposures clearly outline the care pathway. The components include: (i) assessment; (ii) counselling; (iii) prescription; (iv) follow-up; and (v) referral (DoH 2020:3). Assessment, as the first component, seeks to establish the clinical exposure; determines the eligibility for HIV post exposure prophylaxis; HIV testing for those who have been exposed to the virus and, if feasible, the source patient; first aid for cuts and bruises.

Counselling and support in the guidelines address issues including the possible conditions to which the client may have been exposed, depending on the type of exposure, as well as the advantages, disadvantages, and effectiveness of PEP. Taking PEP (notably, the drug side effects); getting tested for HIV; understanding the significance of follow-up visits and testing; Use condoms for four months following exposure to protect partners from HIV and HBV (DoH 2020:6).

Ideally, PEP should be initiated as soon as the exposure is reported whether or not the source status is known. Taking into consideration the underlying comorbidities and potential drug-drug interactions before prescribing. A complete 28-day package is to be provided in the first assessment (no starter packs). Tenofovir 300 mg/Lamivudine 300 mg/Dolutegravir 50 mg once a day x 4 weeks as a fixed-dose combination (TLD) should be considered the gold standard and should be readily available at all facilities, and

alternatives should only be considered in exceptional circumstances if TLD is not suitable or not tolerated (DoH 2020:15).

Follow-up assessment should include adherence support; management of side effects; and referral in cases where the exposed individual tests positive for HIV and other conditions (DoH 2020:8). Side effects of ARV and the importance of adherence to the programme form an integral part of counselling and support. Currently, the WHO PEP guidelines recommend that counselling be available on an ongoing basis to deal with the side effects of the medication (WHO 2021:6).

2.5. THE ROLE OF OHS SERVICE IN HEALTHCARE SETTINGS

The International Labour Organization (ILO) report that millions of HCWs experience work-related illnesses and accidents, and many of them die because of occupational risks (Huei, Ya-Wen, Ming, Chen, Yi & Hung 2020:1). The WHO-ILO (2022:28) describes occupational health services for HCWs as units or clinics providing specialised services to health facilities and workers for the prevention of ill-health caused or exacerbated by work. Research on occupational health has demonstrated that ensuring a safe workplace boosts employee retention and organisational commitment (Rai et al. 2021:2).

Masekameni, Moyo, Khoza and Chamdimba (2020:2) suggest that one of the best strategies to lessen related health impacts is to have access to basic healthcare and occupational health services. Key elements of national occupational health programmes for HCWs, according to the WHO-ILO Joint Global Framework of 2010, include identifying a responsible person with authority for occupational health at both the national and workplace levels. It should also include the creation of joint labour-management health and safety committees with appropriate worker and management representation; identification of hazards and hazardous working conditions to prevent and control them and promotion of exposure; incident reporting and the eliminating barriers to reporting and providing a blame-free environment (WHO/ILO 2022:5). Confidentiality should be respected when monitoring healthcare practitioners, and national occupational health policies should be followed when reporting and retaining records (DoH 2021:9).

2.6. CHALLENGES ASSOCIATED WITH THE UPTAKE OF PEP AMONGST HEALTHCARE WORKERS

The 2014 WHO guidelines for HIV PEP, were developed with the intention of offering a more straightforward method of providing PEP (WHO 2021:88). Studies report that some HCWs prefer to seek PEP services from other facilities for confidentiality purposes and to avoid being seen at their own facility PEP unit (Rasweswe & Peu 2020:4). The Zimbabwean study reports that low uptake, suboptimal reporting, and poor follow up could also be related to stigma, workplace discrimination and lack of confidentiality (Mushambi et al. 2021:563). So, even if PEP is offered, it is possible that HCWs with insufficient training won't finish the course of therapy (Mossburg, Agore, Nkimbeng & Commodore-Mensah 2019:10). It is known that work-related exposure to HIV can result in several serious and incapacitating illnesses, including acute anxiety, decreased job productivity, and overt infections (Mmeremikwu, Ekwunife, Mefoh, Mmeremikwu & Ojide 2020:33).

Currently, PEP completion rates are below ideal in nearly every scenario, so interventions must be taken into account to enhance results (Ford et al. 2015:163). PEP refers to the use of short-term antiretroviral drugs to reduce the risk of contracting HIV (Dulcie et al. 2017:2408). Studies indicate that PEP therapy, when started soon after exposure, reduces the risk of HIV infection by 81% (Bareki & Tenego2018:2). HIV PEP adoption and completion rates are below the optimal level (WHO 2021:90). Even though workplace HIV exposure is remarkably prevalent, HIV PEP is not widely used (Kimaro Adinan, Damian & Njau 2018:2).

2.6.1. Knowledge and attitude towards HIV PEP

Non-compliance and poor knowledge of PEP matters despite the high prevalence of HIV and other bloodborne infections are reported continually. Mmeremikwu et al. (2020:32) argue that HCWs who are adequately informed on HIV PEP and its significance will facilitate its best execution. A Pakistan study reports that there is sufficient awareness about HIV PEP; nevertheless, there is a gap between knowledge and implementation (Shakeel et al. 2022:11). Wangchuk and Letho (2020:1) report that 43% of nurses in Bhutan (Asian country) had been exposed to needlestick injuries and splashing of blood/body fluids and only 2.1% took PEP and completed the 28-days prophylaxis.

Accordingly, PEP efficacy is affected by the timing, nature, and compliance of exposed personnel with the prescribed regimen (Shamil, Legese & Tadiwo 2021:42). In Malawi, despite the program's excellent execution, researchers have discovered that HCWs' perceptions toward it have an impact on their enrolment after exposure (Bareki & Tenego 2018:2). The authors indicate that this is due to fear of stigmatisation and adverse side effect to treatment. For those HCWs who think or know they have HIV fear being discovered, being shunned by their peers, and maybe losing their jobs (WHO 2018:8). The (ibid) further suggests that, given the everyday horrors of AIDS and the persistent cruelties of rejection and shame, there is a fear of facing their potential destiny. There is evidence that some healthcare workers, especially frontline nurses, are unaware of HIV PEP, even though it is widely acknowledged as the fundamental and the sole way to lower the risk of HIV infection following unintentional exposure in the healthcare setting (Raweswe & Peu 2020:2).

Unfortunately, even though healthcare workers are susceptible to HIV infection at work, there seem to be significant gaps in their understanding on HIV PEP (Mmeremikwu et al. 2020:32). According to Kimaro et al. (2018:5), a study conducted in Tanzania indicates just over half of HCWs did not know enough about HIV PEP. According to Kabotho and Chivese (2020:10), what to do following exposure was not clearly understood by the nurses in the study that was done among them at a tertiary hospital in the Western Cape of South Africa. Tanzania is likewise dealing with issues related to HIV occupational exposure and HCWs' inadequate use of HIV PEP (Kimaro et al. 2018:2). Ademe, Mohammed and Edmealem (2020:37) report that although many healthcare workers have experienced sharp injury, the problem is made worse by low HIV PEP completion rates. Nurses who are not well-versed in PEP may be unaware of pertinent information, fail to follow PEP guidelines, and thus put themselves at risk of HIV transmission (Makhado & Seekane 2020:11). While having a positive attitude toward HIV PEP is admirable, it is only meaningful and useful when it is combined with sound understanding and practice (Mmeremikwu et al. 2020:37).

2.6.2. HIV PEP tolerance and adherence in South Africa

HIV PEP treatment adherence involves starting the medication after being exposed at work, finishing the course, and going to follow-up appointments (Dayyab, Iliyasu & Habib 2018:247). The WHO (2021:88), in a systematic study which assessed the tolerance of HIV PEP, there were notable differences in the completion and discontinuation of various ARV medication regimens. In SA, some HCWs are reported to have quit the PEP treatment because of the side effects of medication (Kabotho & Chivese 2020:11). Low uptake of HIV PEP is associated with the inability to tolerate the drugs (Mulatu & Hussen 2019:4).

A South African study on the knowledge and uptake of occupational post-exposure prophylaxis amongst nurses caring for people living with HIV showed that 22% of respondents were unsure if PEP was offered in the hospital where they were employed, and 40% of respondents had no idea what PEP was (Rasweswe & Peu 2020:2). Makhado and Seekane (2020:11) argue that Inadequate PEP information implies that there will be a high likelihood of both poor adherence and HIV seroconversion.

The necessity of PEP must be emphasised because non-compliance could raise the chance of contracting a bloodborne pathogen infection and jeopardize workplace safety (Yi et al. 2018:9). PEP is typically poorly tolerated, and negative outcomes happen in approximately half of the cases, thus resulting in defaulting or not finishing the course (DoH 2020:16). Makhado et al. (2020:13) suggest that PEP training adherence, as well as disease prevention, should be enhanced. Suglo, Aku, Anaman-Torgborb, Tarkang (2021:211) allude that HCWs' perception of their risk of HIV exposure at work and their PEP training greatly improve their adherence to the treatment plan.

For HIV post-exposure prophylaxis, an updated review of the tolerability and completion rates of different ARV regimens recommends using DTG in conjunction with TDF + 3TC (or FTC (DoH 2020:15). The (ibid) further indicate that 90% of those on this regimen finish post-exposure prophylaxis. The guidelines acknowledge the prevalence of side effects; however, they do not stipulate the clinical management thereof. Side effects are the most important reason for discontinuing treatment in Botswana and SA (Mushambi, Timire, Harries, Tweya, Priscilla, Goverwa-Sibanda, Mungofa & Apollo 2021:562).

The Guideline Development Group suggests that, given the significant proportion of PEP completion and low rates of adverse events, DTG may be used as the recommended third medication for HIV PEP (WHO 2021:88).

2.6.3. Underreporting of occupational exposures to HIV in clinical settings

Various studies have demonstrated that HCWs are susceptible to exposure to body fluids including blood and other substances, as well as various types of percutaneous injuries, with a high rate of incidents going unreported (Adetoun et al. 2021:44). According to Auta, Adewuyi, Tor-Anyiin, Aziz, Ogbole, Ogbonna & Adeloye (2017:2), occupational exposure of HCWs in Africa is generally underreported and poorly documented. Inadequate research also contributes to the underreporting of occupational hazards; yet literature has identified a high prevalence of work-related injuries and illnesses in Asia and sub-Saharan Africa (Ogunnaike & Akinwaare 2020:20). The authors also indicate that developing countries lack the necessary expertise and resources to manage occupational exposure. Shakeel et al. (2022:1,3) highlight that there is no reliable database or statistics that show how common workplace accidents are, how often these exposures are reported, or how PEP is used to prevent HIV among Pakistani healthcare professionals. According to Mbah et al. (2020:3), underreporting of BBF exposures is common, accounting for 22% to 82% of cases. Rossouw, van Rooyen and Ritcher (2017:65) suggest that appropriate reporting is essential to monitor the incidences of occupational exposure and identify areas of high risk so that appropriate preventive measures can be implemented.

Participant ignorance of PEP's existence, the source of exposure being an HIV-negative patient, and not knowing to whom to report exposure were among the reasons given for not reporting exposure (Suglo et al. 2021:210). The low usage pattern and trend of PEP regimens indicate a threat to HIV prevention and control (Adebimpe 2018:107). Yi et al. (2018:2) emphasise that the only way to guarantee affected persons receive counselling and a PEP regimen is through timely incident reporting. The (ibid) indicates that exposed HCWs could give up the chance to prevent the emergence of an occupational infection in certain situations.

Mbah et al. (2020:2) argue that employees can obtain the proper post-exposure management and compensation by disclosing injuries and keeping track of all BBF

exposures. The study conducted in Cameroon demonstrated that HCWs' reporting of occupational exposures is still insufficient because none of the exposures were reported in accordance with WHO guidelines (Ngwa et al. 2018:4). Similarly, in SA, the stigma associated with HIV and AIDS leads to a low reporting rate due to concerns about confidentiality (Rasweswe & Peu 2020:4). Reporting platforms are in place in SA. The DoH guidelines (2021:34) urge that monthly reporting of those exposed to body fluids, such as blood, be done at the facilities via the District Health Management Information System (DHIS).

2.6. CONCLUSION

This chapter was based on the literature reviewed related to occupational exposure to HIV through blood and body fluids as well as the post exposure prophylaxis to mitigate the probability of HIV infection. The next chapter will explain the methodology and approach undertaken in this research study.

CHAPTER 3

RESEARCH DESIGN AND METHOD

3.1. INTRODUCTION

This chapter discusses the research design, data collection methods and processes undertaken in the study. Research methodology is useful for establishing the overall framework of research, including strategy, approach, and research philosophy (Al Kilani & Kobziev 2016:1).

3.2. THE STUDY DESIGN AND METHOD

The study used mixed methods research (MMR), which entailed gathering, examining, and combining quantitative and qualitative data in some form (Leavy 2017:9). A concurrent MMR approach was followed. Fetters and Molina-Azorinas (2017:293) describe the mixed method approach as the combination of qualitative and quantitative techniques aimed at producing a more comprehensive understanding than could be obtained from either one alone. MMR is about using expanded knowledge and validity to look for ways to improve, illustrate, and clarify the findings of one technique by comparing them with the findings of another approach (Schoonenboom & Johnson 2017:110).

A "concurrent nested design" is where the main research method is used with another to answer different research questions or focus more on a minor group (Barnes in Maarouf 2019:4). Qualitative nested in quantitative designs involve using a quantitative approach as the main research strategy and nestling a qualitative component in the design (Leavy 2017:263). This study consisted of at least one qualitative research objective and question, which required the researcher to interview some participants. The study was conducted concurrently and independently, and the phases are discussed separately below.

3.2.1. Phase 1: Empirical

3.2.1.1. Quantitative strand

The quantitative research approach uses scientific techniques for data collecting and analysis to enable generalisation (Daniel 2016:19). The design aims to support, refute, or

validate established hypotheses and is distinguished by deductive approaches to the research process. Additionally, to identify patterns, correlations, or causal linkages, this kind of research entails measuring variables and testing associations between variables (Leavy 2017:9). The researcher employed pretested self-administered questionnaires to answer the research questions**.** The questionnaire was pre-tested with midwives working in the neonatal ICU of one of the selected research sites, where approval to conduct a study was granted.

3.2.1.2. Quantitative study designs

The study was non-experimental quantitative research with a cross-sectional descriptive design. In non-experimental research, researchers do not interfere by modifying the independent variable (Polit & Beck 2017:203). Additionally, Polit and Beck (2018:228) suggest that statistical analysis is used in quantitative research for three primary purposes, which describing data, testing hypotheses, and supplying evidence about the measurement characteristics of quantified variables. The researcher used descriptive statistics to synthesise and describe data (Polit & Beck 2018:229).

Cross sectional descriptive study design was followed. The idea of employing a cross-sectional study design was to gather trustworthy information that would enable the creation of fresh hypotheses and strong conclusions (Zangirolami-Raimundo, Echeimberg & Leone 2018:356). Furthermore, cross-sectional studies are helpful in determining the prevalence of a phenomenon in a specific population, regardless of whether it is thought to be the source, the effect, or both (Raimundo et al. 2018: 257). The goal of the descriptive design is to present the phenomenon's specifics, interpretations, and background from the viewpoint of those who are experiencing it (Leavy 2017:5). In this study, the researcher evaluated the implementation of the existing PEP guidelines when midwifery practitioners are exposed to human blood and body fluids by assessing participants' knowledge, attitudes, and awareness.

3.2.1.3. Qualitative strand

Accordingly, the qualitative design provided understanding and interpretation of social interactions which in this study was the experiences, attitudes, and knowledge of

participants (Apuke 2017:42). Qualitative research is grounded on values that emphasise the significance of individuals' subjective experiences, meaning-making processes, and comprehension (Leavy 2017:9). The study used individual interviews with occupational health and safety practitioners and midwifery practitioners to explore their experiences regarding the implementation of PEP guidelines.

3.2.1.4. Qualitative study design

A descriptive phenomenology design was followed for the qualitative study. The goal of descriptive phenomenology design is to investigate participants' experiences of phenomena as they come into awareness (Leigh-Osroosh 2021:1817). This design responded to the set objective which aimed to explore the lived experiences of midwifery practitioners and occupational health and safety practitioners on implementing the post exposure prophylaxis treatment for HIV.

3.2.2. Phase 2: Development of strategies

Using the Delphi technique, the researcher developed strategies with the assistance of a panel of experts. Delphi processes are organised group communication methods where experts evaluate complicated issues with partial and ambiguous knowledge through an iterative process (Niederberger & Spranger 2020:2). Moreover, Mthimunye and Daniels (2019:3) describe the Delphi method as a repeated approach of arranging communication between a group of people who are specialists in several relevant subjects and who can give meaningful contributions to resolve a complex problem. The strategies were developed with reference to the WHO guideline development steps, which are:

(i) Convention of a multidisciplinary working group to analyse the need and priorities of the findings of the study.
(ii) Identification of potential barriers and facilitating factors.
(iii) Determination of available resources and the support required to implement recommendations.
(iv) Provision of information to relevant implementers.
(v) Designing implementation strategies (WHO 2014:166).

The researcher identified (through various contacts) and recruited professionals in relevant speciality areas to participate in the validation of strategies. The experts were contacted telephonically to brief them individually about the study and the desire to include them. Following telephone calls, emails were sent to the expert panel with a document detailing the background of the conducted study. The information shared included the research objectives and questions, the theoretical framework underpinning the study, the findings, and the proposed strategies. The roles of expert panels were outlined on the consent form. Their roles included determining the applicability in terms of relevancy to the findings and applicability in terms of costs and setting. The timeline for review of the strategies was discussed with the panel, which they all complied with. The first-round feedback from the panel was received within two weeks, which the researcher reviewed and accepted and further shared the refined strategies for a second and final round of approval. The working group consisted of a panel of experts in occupational health and safety (OHS), quality, infection prevention and control (IPC) and HIV/AIDS management.

3.3. POPULATION AND SAMPLING

The study population is the set of components from which a sample is taken (Leavy 2017:76). In this study, the population was all registered midwifery practitioners working in the maternity units (labour ward and postnatal ward) and occupational health and safety practitioner from selected hospitals in Tshwane District of Gauteng Province.

Cash, Isaksson, Maier, and Summers (2021:1) define a sample as a portion of the population. Sampling is the method by which a researcher chooses a few cases from a wider population (Leavy 2017:76). In this study, the sampling process was done in two different ways to cater for the two research methods that the researcher engaged.

Quantitative research favours larger sample sizes, whereas qualitative favours smaller sample sizes (Leavy 2017:77). The two methods are described separately below, namely quantitative, and qualitative strands.

3.3.1. Quantitative strand

The researcher followed a probability sampling technique in selecting the setting and population for the proposed study. Accordingly, this sampling technique therefore indicates that every known demographic segment will most likely be represented in the sample (Adwok, 2015:95). In addition, probability sampling involves the use of mathematical rules to ensure that each person has an equal probability of being represented in the sample (Cash et al. 2022:10).

3.3.1.1. Quantitative sampling technique

A simple random sampling technique was used, where the researcher drew a random sample of the desired size of midwifery practitioners from the staff roster with an assurance that the likelihood of sample bias would be avoided (Polit & Beck 2018:164).

Inclusion criteria

- All registered midwifery practitioners in the maternity units who were willing to participate in the study, with three (3) months or more working in the maternity unit.
- At least one occupational health practitioner from each hospital and willing to participate in the study.

Exclusion criteria

- Registered nurses who are currently not working in the maternity units or have less than three months working in the maternity units.
- All midwifery practitioners in maternity units who were not willing to participate in the study.
- All midwifery students.

3.3.1.2. Quantitative sample size

The researcher made a predetermination of the approximate number of midwifery practitioners across the maternity sections of the selected hospitals for anticipation and determination of the sample size. The researcher was able to contact the maternity units of the selected hospitals to enquire about the approximate number of midwifery practitioners, which was freely shared by the managers to determine the estimation of the

sample to include in the study. The total population in the study was 133 registered midwifery practitioners on the sampling frame, using the online calculator for sample size determination with a confidence level of 95% and confidence interval of 5, the sample size needed was 99.

3.3.2. Qualitative strand

The aim of qualitative sampling is to include in the sample all variations of the objects of observation that are judged pertinent to the study to "see the issue and its meanings from as many angles as possible'' (Busseto et al. 2020:6). A purposive non-probability sampling technique was used to sample the occupational health and safety practitioners. Purposive sampling is a judgemental sampling technique where the researcher chooses study participants from the study population at random (Obilor 2023:4). The author further states that the advantage of this technique is that it reduces the possibilities of errors in data collection as the data sources are a close fit to the research context. The study required only one occupational health and safety practitioner from each selected hospital to clarify and corroborate the data regarding the implementation of PEP guidelines and compliance thereof. A few other midwifery practitioners were drawn from the quantitative sample frame through the nesting approach for telephonic and face-to-face interviews with the expectation to explore further their experiences about the PEP guidelines.

Inclusion criteria

- One occupational health and safety practitioner from each selected hospital with at least 1-year experience working at the same hospital.
- Midwifery practitioners consented to participate by completing the questionnaire.

Exclusion criteria

- Occupational health and safety practitioners with less than a year of experience working in the selected hospital.
- Midwifery practitioners who have not participated in the completion of the research questionnaire.

3.3.2.1. Qualitative sample size

According to Busetto et al. (2020:7), qualitative research does not require specific sample sizes nor requires the sample size to be determined. In addition, one guideline for qualitative research is to sample just until data saturation is reached, which is the moment at which data collecting is completed and a sense of closure is reached because more data provide duplicate information (Moser & Korstjens 2018:11). In each selected hospital, there was one OHS practitioner. Thus, three occupational health and safety practitioners were interviewed, one from each selected hospital. The researcher also interviewed some midwifery practitioners from each selected hospital who had participated in the quantitative study.

When using a nested sample design, a subset of participants from one study component are included in a subsequent phase of the study (Wium & Louw 2018:7). The researcher conducted semi-structured individual interviews with the OHS practitioners as the source of information to seek elaboration and clarification regarding the presumed problem in question.

3.4. DATA COLLECTION

Data collection was approached in a parallel fashion. Quantitative and qualitative data collection processes were conducted concurrently and independently. Questionnaires were used for the quantitative data collection, while semi-structured interviews were conducted for qualitative data collection. The two strands are discussed below, starting with developing and testing data collection instruments and their characteristics.

3.4.1. Development and testing of the data collection instrument

The questionnaire was developed in reference to the WHO and local HIV PEP guidelines. A professional biostatistician assisted in validating that the questionnaire would elicit the desired outcome. The pilot test for questionnaires and interview guides was conducted to validate whether the tools' content was valid or not. Pilot studies are small-scale investigations that take place before more comprehensive ones and assist researchers in refining the larger study (Williams-McBean 2019:1055).

The researcher pilot tested the quantitative tools among five midwifery practitioners in the Neonatal Intensive Care Unit (ICU) of one selected hospital from which approval to conduct the study was granted. The researcher was able to determine the length of the tool by establishing how long it took the participants to complete the questionnaires. The interview guides were also tested among the three midwifery practitioners at the same neonatal ICU, which was not included in the testing of the questionnaire. These pilot interviews were recorded to test the quality of recording equipment.

The tools seemed to elicit the desired responses and reassured the researcher that they were clear and would be understandable to the main participants. The tools did not require any adjustments or modifications. Participants used in the pilot test were not part of the main study.

3.4.2. Characteristics of the data collection instrument

The questionnaires, as guided by literature and PEP guidelines covered four sections, including the participants' socio-biographical data, their knowledge and attitudes towards PEP, the prophylactic treatment experiences, and compliance with PEP guidelines. The researcher used a Dichotomous scale combined with a Likert scale to approach the questions. The Likert scale sought to determine the respondent's attitudes with the negative or positive or neutral responses. The interview guides were designed with open ended questions to elicit more descriptive information on participants' experience on the subject under investigation.

3.4.3. Quantitative strand

Quantitative research aims to quantify variables numerically so that statistical analysis and description can be performed on them (Rebar & Gersh 2015:157). The researcher developed a questionnaire which was validated by the biostatistician prior to implementation to ensure the possibility of eliciting desired data. The questionnaire was pilot tested among a similar cohort of cadres from the neonatal ICU of one selected hospital where permission to conduct the study was granted, and this was done to ensure validity.

3.4.3.1. Quantitative data collection procedure

The contact numbers of the midwifery practitioners were requested from the operational managers beforehand for the researcher to make appointments for remote contact with them to present the purpose of the study and all information that would guide the prospective participants to be interested. Questionnaires were delivered physically to the selected units to the participants through the unit manager. The questionnaires were accessed from the unit manager's office. Attached to the questionnaire were the participant's request to participate in the study, the letter, and the consent form.

Information leaflets and consent forms regarding the study were handed over to the prospective participants through the operations manager for easy access, even in the absence of the researcher. The researcher returned to the research site to collect the signed consent forms. The questionnaires were coded to ascertain the anonymity of those who participated in responding to the questionnaires. The researcher arranged with the operational managers to accept all completed questionnaires from participants.

3.4.4. Qualitative strand

The researcher used a developed interview guide to conduct semi-structured individual interviews with the selected participants. Semi-structured interviews are characterised by the use of an interview guide (or topic guide/list) that covers the main topics of interest and open-ended questions (Busetto et al. 2020:3). The researcher used separate interview guides to conduct the interviews with midwifery practitioners and OHS practitioners with the view that questions relevant to OHS practitioners were mainly administrative, while the midwifery practitioners needed to share their knowledge and experience as cadres in the centre of exposure to blood and body fluids. Telephonic appointments were made with participants. The interviews were conducted during their breaks to avoid interruptions to their duties. The meetings which were short in duration, were held in accordance with the COVID-19 norms.

3.4.4.1. Qualitative data collection procedure

The researcher conducted telephonic interviews with occupational health practitioners to obtain information and follow up with those who were put on the PEP programme. During

telephonic interviews, the researcher set the phone on speaker while using the tape recorder to record the interviews at the same time taking shorthand notes. Individual interviews were conducted telephonically with some midwifery practitioners at their convenient times. A few other midwifery practitioners preferred face-to-face interviews, hence appointments to meet them during their break were arranged. Statistics of reported cases of occupational exposures and outcomes were obtained from occupational health and safety practitioners. The midwifery practitioners were expected to share information regarding their knowledge and first-hand experience of the PEP guidelines. All meetings were recorded, and shorthand notes were taken at the same time by the researcher.

3.4.5. Ethical considerations related to data collection

The researcher received ethical clearance from the University of South Africa (UNISA)'s Research Ethics Review Committee. Following receipt of the research clearance certificate, the researcher uploaded the protocol to the National Health Research Database (NHRD) for approval prior to engaging in data collection, where a reference number was allocated *(GP_202109_048).* The requests to conduct the study in all three hospitals explaining the purpose and procedures intended to be followed were communicated via email, and permission was granted (See Annexure A, B & C). Discussed below are ethical principles the researcher applied throughout the data collection process.

3.4.4.1. Autonomy

The idea that every individual has inherent, innate value and ought to be capable of making morally sound decisions serves as the basis for autonomy (Varkey 2021:19). The (ibid) further argues that every individual has the right to exercise their innate ability to make decisions for themselves. All participants were of sound mind and were given an opportunity to make their own decision to participate in the study. The participants knew of their right to withdraw from participation at any moment a discomfort was experienced. The purpose of the study was shared with the prospective participants prior to the request to sign the consent forms.

3.4.4.2. Informed consent

As a condition of providing their informed consent for study, participants must meet certain requirements, including being able to understand and make decisions, receiving complete disclosure, understanding the disclosure, acting willingly, and giving their assent to the proposed activity (Varkey 2021:19). Comprehensive information regarding their participation was provided in written form and was explained during the contact sessions. The researcher explained the anticipated benefits of the study, adding that no risks may be incurred while participating. Informed consent forms were distributed to participants before the beginning of the study, and enough time was given to participants to read through the document. The content shared with participants clearly emphasised that participation is voluntary, and withdrawal will be allowed anytime during the research process.

3.4.4.3. Beneficence

The principle of beneficence is the duty to act in the participants' best interests (Varkey 2021:18). The author indicates that it upholds several moral precepts that safeguard and defend others' rights, avert injury, and eliminate circumstances that could lead to harm. The researcher aimed to use the findings to develop strategies to enhance compliance with PEP, which is anticipated to benefit midwifery and occupational health and safety practitioners. There were no anticipated risks associated with participation in the study.

3.4.4.4. Non-maleficence

Varkey (2021:18) describes the principle of non-maleficence as the obligation not to harm. The research questions were designed in a manner that would pose no obvious harm to the participants. The study was conducted amid the COVID-19 pandemic, and measures to mitigate the risk of transmission were applied. Thus, the researcher complied with all COVID-19 protocols, including consistently wearing face masks, using alcohol-based sanitisers to spray hands, and maintaining proper physical distancing during face-to-face interviews.

3.4.4.5. Confidentiality

Al Tajir (2018:4) alludes that confidentiality is concerned with individuals who can access the data once it has been accessed by the researchers. Pseudo names were used for qualitative data collection to eliminate any risk of association with actual participants. The participants were reassured that all the data provided would not be linked to their names, and questionnaires were marked with codes, not participants' names. The researcher's cell phone access was password protected to prevent anyone from accessing the recorded voice interviews on the downloaded recording app. Prior to data analysis, the statistician and the co-coder were required to sign a binding confidentiality agreement.

3.5. DATA MANAGEMENT

Pseudo names and codes were used, and no linkage to the participants was made during data management. The researcher kept completed questionnaires and interview notes secure in a locked cabinet they could only access for scholarly or future research needs. The computer that held the electronic data was password-protected. The records would be safeguarded by the researcher for a minimum of five years. To ensure accurate data management during the data analysis process, the researcher used a biostatistician and co-coder. The co-coder was a peer researcher but not part of this study. The researcher can simplify and concentrate on data features by using coding (Nowell, Norris, White & Moules 2017:5).

3.6. DATA ANALYSIS

The goal of the concurrent parallel design is to compile the findings of the quantitative and qualitative data analysis for comparison and fusion (Lall 2021:145). The results of this study were combined after independent analyses of the quantitative and qualitative data were completed. Combining approaches can be done for a variety of reasons, such as expansion to increase the study's scope and breadth, complementarity to illustrate and clarify findings, and triangulation to confirm findings (Busetto, Wick & Gumbinger 2020:5). The authors also state that using the strength of one approach to balance the weakness of another or explaining (unexpected) results produced by a single method. Data analysis methods and processes are discussed at length in Chapter 4.

3.6.1. Quantitative strand

A descriptive data analysis method was used. The researcher involved the same statistician who validated the quality of the questionnaire to assist in data management or analysis. Data was captured on a Microsoft Excel spreadsheet and analysed using the statistical software for social sciences (SPSS) analytical package Version 24. The results are presented as percentages on graphs, charts, and statements.

3.6.2. Qualitative strand

Face-to-face interviews were conducted with some participants, while some were telephonically engaged. The recording was activated in the process for later retrieval, where the word-for-word was captured and interpreted. Qualitative content analysis of data was done. Data analysis was started by reading the data and identifying themes. After that, categories were created, and these themes were applied to the rest of the data (Kibiswa 2019:2060).

3.7. INTERNAL AND EXTERNAL VALIDITY OF THE STUDY

3.7.1. Quantitative strand: validity and reliability

3.7.1.1. Validity

According to Polit and Beck (2017:747), validity in quantitative research refers to extent to which an instrument measures what it is supposed to measure. The researcher designed the broader questionnaire focused on the compliance level on post exposure prophylaxis guidelines among midwifery practitioners working in the maternity units at the selected hospitals. The questionnaire was first tested among midwifery practitioners in the neonatal ICU of one of the selected hospitals to establish if its purpose would be served prior to data collection. The researcher was convinced by the responses from the cohort engaged for the testing purpose that the instrument was indeed valid for the intended purpose.

External validity

Polit and Beck (2017:728) define external validity as the extent to which the study's findings can be applied to environments or populations other than the one it was conducted on. The researcher anticipated that the results in this study might not be

generalisable to the whole population of the involved cohort of cadres as the study was limited to only three hospitals in the Gauteng province of SA.

Internal validity

Internal validity is the extent to which it is possible to conclude that an experimental intervention (independent variable) caused the observed effects on the result rather than confounding variables (Polit & Beck 2017:731). The researcher used a simple random sampling method wherein participants were selected in a manner representative of the population to be studied. This chosen sampling method exonerated the researcher from influencing the outcome of the study. The researcher also pre-tested the questions among a cohort of midwives not meant to be included in the study before embarking on the actual data collection.

3.7.1.2. Reliability

Reliability refers to the degree of error-free measurement (Polit & Beck, 2017:742). Before the actual data collection, the researcher pretested questions to test the data collection tools to source the desired data as designed. The researcher ensured the involvement of a professional statistician to assist in data management or analysis.

3.7.2. Qualitative strand: Trustworthiness

Lincoln and Guba's criteria in Brown et al. (2015:812) indicate that trustworthiness includes credibility, dependability, confirmability, and authenticity. In ensuring integrity and reliability, the researcher was committed to the ethical principles from preparation, organisation and reporting of results.

3.7.2.1. Credibility

According to Polit and Beck (2017:559), credibility refers to the assurance of the veracity of the information and conclusions. Employing both quantitative and qualitative approaches enhance the integrity of the findings.

3.7.2.2. Dependability

Polit and Beck (2017:559) assert that credibility cannot be attained in the absence of dependability, which refers to the stability of data over time. Keeping an audit trail of the

entire research process by being transparent with all the steps taken to conduct the research responded to the principle of dependability.

3.7.2.3. Confirmability

Confirmability is the capacity to demonstrate that the data accurately reflects the information that the participants gave, and that the interpreter did not create the interpretation (Polit & Beck 2017:560). The recorded and transcribed material (raw data) were kept safely in case a revisit is required to confirm or compare with results from any similar study to eliminate disparities from other researchers or persons of interest. The development of strategies to improve compliance towards PEP guidelines was guided and approved by experts in the field.

3.7.2.4. Transferability

According to Polit and Beck (2018:296), transferability is the degree to which qualitative findings are applicable in different contexts or people. Although with qualitative methods, the findings may not be generalised to the entire population of midwifery practitioners, the researcher was of the view that by understanding their work context and awareness, an inference can be made to cover the larger population of the similar cohort. Wium and Louw (2018:3) assert that because the quantitative strand of mixed methods research uses a suitable sample size and the qualitative strand employs dense descriptions, the findings are transferable to similar contexts and population groupings. Data collected via questionnaires were triangulated for corroboration through the semi-structured interviews.

3.7.2.5. Authenticity

Authenticity was maintained by applying Lincoln and Guba's authenticity criteria set out in Amin, Norgaard, Cavaco, Witry, Hillma, Cernasev and Desselle (2020:8). The criteria encompass the following aspects: educational authenticity, ontological authenticity, tactical authenticity, catalytic authenticity, and fairness. The researcher, therefore, attempted to clarify and honour construction in a balanced, impartial way. All interviews were guided by the same interview guide (separate for OHS practitioners and midwifery practitioners), allowing all participants equal and similar opportunities to respond openly.

3.8. CONCLUSION

This chapter addressed the methodology and designs undertaken in the study. The next chapter will describe in detail the data analysis methods and procedures.

CHAPTER 4

ANALYSIS, PRESENTATION, DESCRIPTION AND DISCUSSION OF THE RESEARCH FINDINGS

4.1. INTRODUCTION

The previous chapter described the methods undertaken for this study, including the data collection processes and characteristics of data collection instruments. The researcher engaged in data collection for two months, with both qualitative and quantitative data collected concurrently. This chapter, therefore, focuses on the analysis and description of the collected data using two methods, namely, quantitative descriptive analysis and qualitative thematic analysis approaches. The chapter further provides generated evidence in relation to themes and subthemes derived from the analysed data of the participants' word-for-word statements. Diagrammatic demonstrations in the form of charts and tables are presented in this chapter to complement the descriptions and thematically analysed data from the participants.

The focal areas of data analysis in this chapter for both qualitative and quantitative strands include the participant's socio-demographic information and the results of the research study in accordance with the study objectives. The data analysis is presented parallel, namely, quantitative, and qualitative findings. For clarity purposes, the research objectives which formed the basis of this mixed method study, as outlined in Chapter 1, are listed below.

- To determine the utilisation and uptake of HIV PEP among midwifery practitioners in the hospitals.
- To explore the experiences of midwifery practitioners and occupational health and safety practitioners on compliance regarding the PEP guidelines.
- To assess the knowledge, attitudes, and perceptions of midwifery practitioners regarding PEP guidelines.
- To develop strategies to improve compliance with post exposure prophylaxis guidelines among midwifery practitioners.

4.2. DATA MANAGEMENT AND ANALYSIS

4.2.1. Data management - quantitative strand

Quantitative data was collected through questionnaires. Microsoft Excel sheet was used for data entry. Data cleaning and analysis were performed using the statistical package for social sciences (SPSS) version 24. Frequencies and charts were used to summarise socio-demographic characteristics, level of knowledge, attitudes, and compliance with PEP.

The researcher arranged with the operational managers of the selected hospitals to facilitate the distribution and collection of questionnaires. The compendium of documents given to the operational managers included the request to participate in the study letter (information leaflet) and consent forms to sign after reading the information in the letter and before participating in the completion of a questionnaire. The signed consent forms were kept separately from the completed questionnaires to reassure the respondents that no linkage to their names could be made. All questionnaires were coded with alphanumeric codes and counted for audit trail purposes. The researcher delivered fifty questionnaires at each hospital. At least 15 completed and 35 incomplete questionnaires were collected from the district hospital; 24 completed and 26 incomplete questionnaires were collected from the regional hospital, and 32 completed and 18 incomplete questionnaires were collected from the provincial tertiary hospital. A total of 71 questionnaires were completed giving a response rate (RR) of 53.3%.

4.3. DATA PRESENTATION AND ANALYSIS- QUANTITATIVE STRAND

The study was conducted in three hospitals which were district, regional and provincial tertiary hospitals in the Tshwane district of the Gauteng province. The target sample for the quantitative study was midwifery practitioners working in the maternity units, i.e., labour, and postnatal wards. The questionnaire was divided into four sections: Part 1, socio-demographic data; Part 2, assessment of knowledge about PEP; Part 3, assessment of attitudes towards PEP and Part 4, assessment of compliance with PEP. This section will describe all four parts of the questionnaire beginning with the socio-demographic information of participants who eventually participated in the study.

4.3.1. Part 1: Socio-demographic information of respondents

The socio-demographic information of respondents is presented in Table 4.1 below. The specific variables are discussed briefly in the subsequent sections.

Table 4.1: Socio-demographic characteristics of respondents

Age range:	***Number of respondents (n=71)***	***Percentage***
20-29	17	23.9%
30-39	18	25.3%
40-49	12	16.9%
50 and above	24	33.8%
Gender:		
Male	4	5.6%
Female	67	94.3%
Marital status:		
Married	42	59.1%
Single	27	38%
Divorced	2	2.8%
Professional status:		
Basic midwifery	48	67.6%
Post-basic midwifery	23	32.3%
Area of allocation within maternity units:		
Labour ward	46	64.7%
Post-natal ward	25	35.2%
Years of experience in maternity units:		
2-5 years	23	32.3%
6-10 years	19	26.7%
>10 years	29	40.8%

- **Respondents' age distribution**

The age variable was considered to determine if the level of compliance with PEP guidelines could be influenced by age. Moreover, age may influence the level of accountability and responsibility. The age of respondents ranged from 23 to 65 years old with the mean age of 42 years. The respondents aged between 20 to 29 were at 23.9% (n=17) while, 25.3% (n=18) were within the ages of 30 and 39. Between 40 and 49 were 16.9% (n=12) of the respondents. A proportion of 33.8% (n=24) were aged between 50

and 65 years. In this cohort, the highest number of midwifery practitioners were at the age of 50 and above. This is a clear depiction that midwifery is indeed an aging profession. In the upcoming years, there will be fewer registered midwives due to the age distribution of the midwifery workforce and the impending retirement of a sizable percentage of this cohort (Callander, Sidebotham, Lindsay & Gamble 2021:56).

- **Respondents' gender**

Midwifery is one profession that females mostly dominate. This is evidenced by the data collected depicting male practitioners' scarcity in the space. Amongst the 71 respondents, only 5.6% (n=4) males participated in the study while 94% (n=67) were females.

- **Respondents' marital status**

The marital status of the respondents is presented in table 4.1 above. About 38% (n=27) respondents were married, while 59.1% (n=42) were not married, and only 2.8% (n=2) indicated that they were divorced.

- **Professional status**

Data on the professional status sought to establish the respondents' levels of qualifications including basic midwifery qualification, post basic midwifery or masters in midwifery. Amongst the respondents, 68% (n=48) of midwifery practitioners possessed a basic midwifery qualification while 32% (n=23) had a post basic midwifery qualification.

- **Area of work allocation in maternity units**

The level of risk for occupational exposure to blood and body fluids in maternity units is indisputably higher, considering the inherent nature of procedures performed in the space of midwifery. Direct contact with women's body fluids during labour and postnatal care is unavoidable. The participants in this study worked in the labour ward and postnatal ward. Most respondents were working in the labour ward. This is according to the human resource distribution to cover units according to acuity levels. The staff allocated to labour wards in all three hospitals proved to be more as compared to postnatal wards. 65% (n=46) of respondents were allocated to the labour wards, and 35% (n=25) were from the postnatal wards.

- **Years of experience working in maternity units**

There could be some truism in the saying ‘experience is the best teacher’. This requirement to assess the level of experience was to determine the difference in incidences of direct exposure to blood and body fluids while performing routine duties among the less experienced and the more experienced midwifery practitioners. The inclusive sample of the study was midwifery practitioners with two or more years of experience in midwifery. A proportion of 32.3% (n=23) have been working in the maternity units for about two to five years. Those with experience of between six to ten years were about 26.7% (n=19), with the ones with extensive experience of ten years and more being at 40.8% (n=29).

4.3.2. Part 2: Knowledge about PEP

Part 2 of the questionnaire assessed the knowledge of post exposure prophylaxis as well as the respondents’ experience of occupational exposure to BBFs. One question was discarded as it proved to have taken a qualitative format which the participants seemed to have a challenge responding to. Only 17 questions were analysed. Of the analysed questions, five were more PEP knowledge based with the rest assessing experience and utilisation of PEP. Some of the questions were not responded to (blank) due to the level of personal impact on participants and subsequently required that participants who answered ‘NO’ to a particular question not provide follow up responses. Some of the responses are presented with the addition of charts to substantiate a diagrammatical demonstration of significant aspects for the context of this study. Below is the presentation of results covered under the knowledge of the PEP aspect.

4.3.2.1. Have participants heard about PEP and the availability of PEP guidelines?

All respondents, 100% (n=71) in the study indicated having heard about the PEP. The objective of this question was to derive a base of knowledge from the respondents and to determine if they would have any information about PEP.

4.3.2.2. Availability of PEP guidelines in the unit

A total of 73% (n=52) respondents were aware of the availability of guidelines in the unit, while 10% (n=7) and 17% (n=12) did not know or were unsure of the availability of

guidelines, respectively. Figure 4.1. below indicates the level of awareness or lack thereof in both labour and postnatal wards.

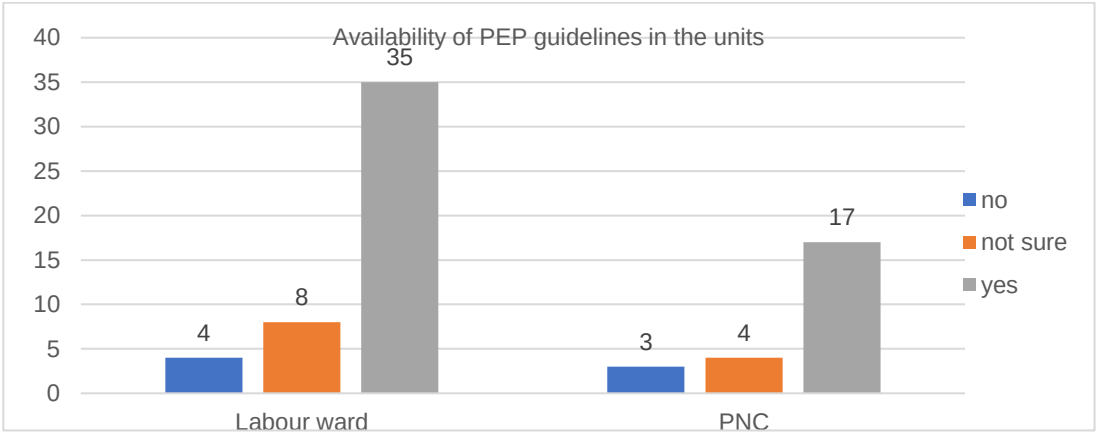

Figure 4.1. Availability of PEP guidelines in Labour ward and Postnatal wards

4.3.2.3. Perceptions for PEP having the potential to prolong life

An average of 72% (n=51) respondents regard PEP as having the potential to prolong life, whereas 13% (n=9) do not perceive PEP as having the potential to prolong life, with 16% (n=11) being uncertain of its potential. These responses are evidence that some of the respondents will not adhere to the PEP guidelines. A high risk of seroconversion to HIV and other infections has been linked to inadequate adherence to routine PEP protocols (Aigbodion, Motara & Laher 2019:5).

4.3.2.4. PEP is regarded as an effective measure to prevent HIV

A proportion of 75% (n=53) of midwifery practitioners regards PEP as effective in preventing HIV. Three percent (n=2) did not regard PEP as effective while 23% (n=16) were not sure. Although most respondents regard PEP as an effective measure to prevent HIV, there is still a notable significant gap in knowledge about the purpose of PEP.

4.3.2.5. Maternity units perceived as high risk

Midwifery practitioners regarded their work environment as high risk, with 92% (n=65) indicated in their response to the question about whether exposure to blood and fluids makes their environment high risk or not. At least 6% (n=4) did not view the environment as high risk, while 3% (n=2) were not sure if blood and body fluids make their work

environment high risk by default. Most needle stick injuries are reported to occur whilst performing wound suturing (Aigbodion 2019:4). This type of injury is not foreign to midwifery practice as midwifery practitioners are also faced with suturing of episiotomies and torn perineum post child deliveries routinely.

4.3.2.6. Training on implementation of guidelines

A total of 19 participants responded to the question of whether training was provided or not. Training on implementation of PEP guidelines seems to be very minimal as evidenced by the response from 63% (n=12) respondents who answered 'no' to the question on training. Of those who responded that training was provided, was 26% (n=5). Makhado, Musekwa, Makhado and Otsheleng (2022:6) suggest that PEP procedures and adherence to PEP emphasis should be included in HIV training and formal education (pre-service). In this study, it is not clear what content was shared and when the training was provided for those who acknowledged receipt of training. To minimise HIV transmission through occupational exposures, healthcare workers must occasionally receive enlightenment and training programmes that improve their awareness of the field (Adebimpe 2018:107). The inadequate implementation of PEP can be attributed to various factors, such as inadequate understanding, inadequate oversight, and a lack of guidance on PEP protocols (Aigbodion 2019:5). Figure 4.2. provides a picture of the state of training received or not received among respondents.

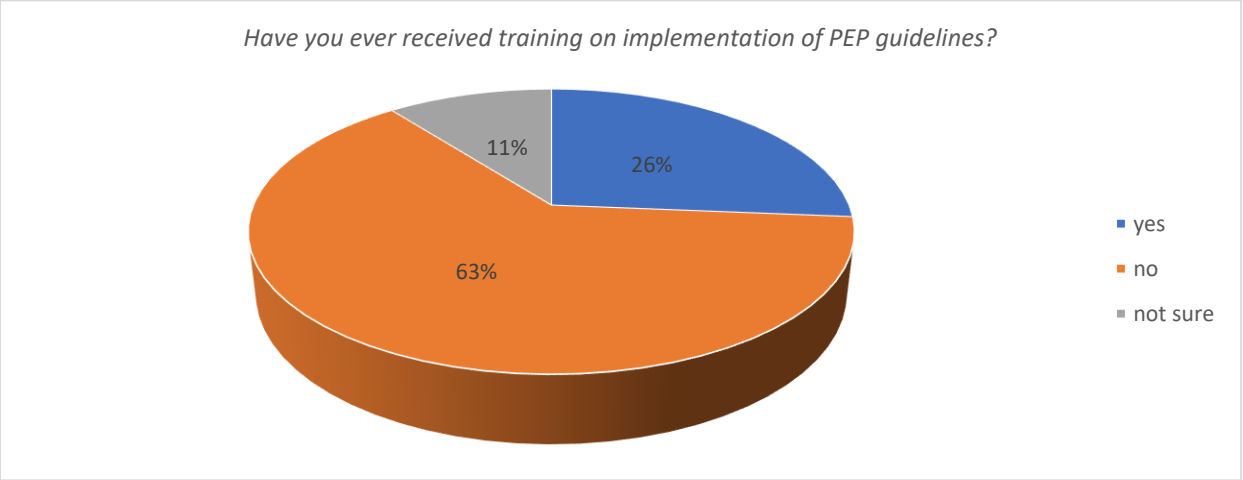

Figure 4.2. Training on PEP guidelines

4.3.2.7. Awareness of reporting procedures

Although 86% (n=61) are aware of the procedure for reporting the incidence of exposure as communicated to all personnel, at least 9% (n=6) were not aware of the reporting procedures and 6% (n=4) were not sure if the procedures were ever communicated to them. All exposures must be reported to the relevant official as per guidelines. In this cohort of 70% (n=50) respondents who were exposed to BBFs, at least 51% (n=35) reported the incidents, while 21% (n=15) did not report them. These observed negative trends and usage patterns of the PEP regimen suggest a threat to HIV control and prevention (Adebimpe 2018:107). Figure 4.3. shows the incident reporting trend in this cohort of respondents.

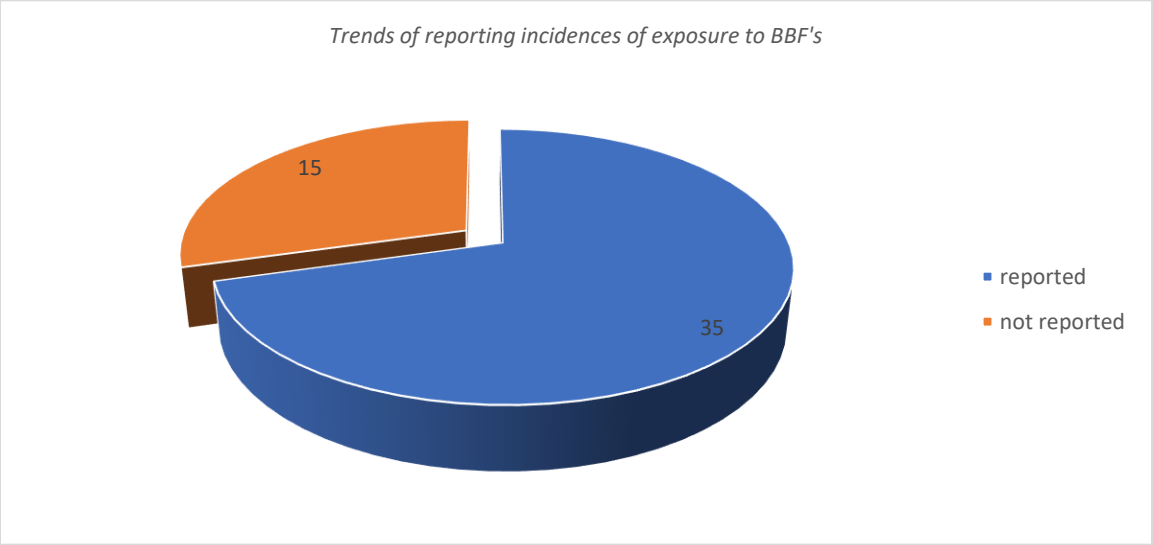

Figure 4.3. Reported vs non reported incidents of BBFs

4.3.2.8. Direct exposures to BBFs in maternity units

Over 70% (n=50) of respondents reported that they had been directly exposed to BBFs at least once in their line of duty. A minimum of 28% (n=20) responded that they were never exposed to patients' blood and body fluids while performing their duties. One respondent did not answer this question. Of those who were directly exposed, 48% (n=34) performed first aid, and 23% (n=16) did not.

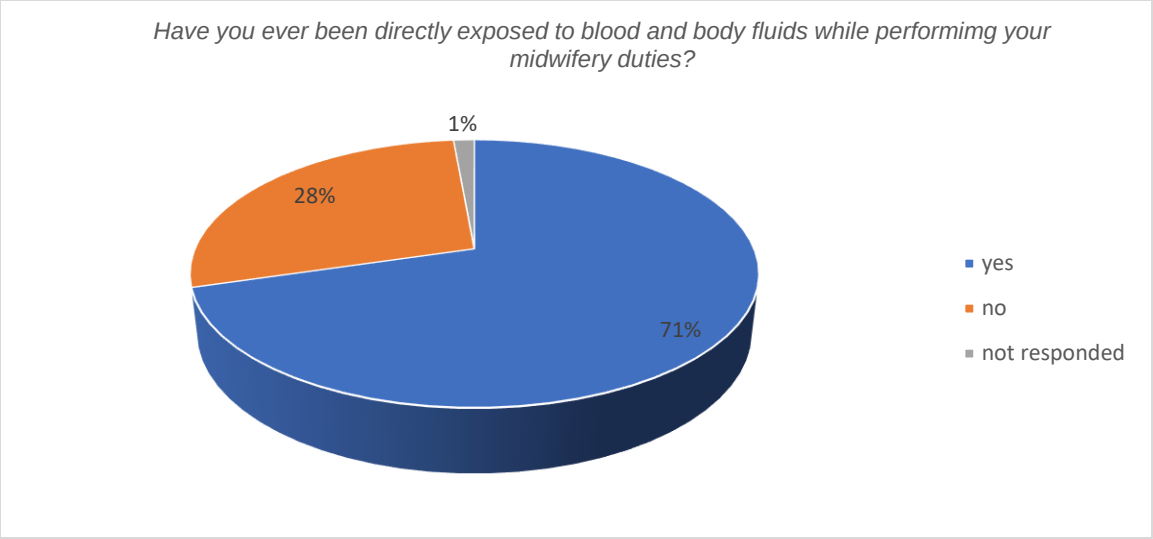

Figure 4.4. Direct exposures to BBFs in maternity units

4.3.2.9. Support is given to participants who were exposed

Respondents who agreed that support was sufficient for those who were exposed and put on the programme were an average of 51% (n=36). A proportion of 25% (n=18) indicated a lack of support, while 24% (n=17) were unsure if help was available. Accordingly, counselling, risk assessments, pertinent laboratory testing, and four (4) weeks of antiretroviral therapy with support and follow-up are all included in the PEP programme (Makhado et al. 2022:1). The form and level of support provided may not be well determined as experienced differently by individual HCW. Looking at those who were not sure if support was provided, it might be a factor which influenced the decision to report the incident or not due to fear of lack of support. Aigbodion et al. (2019:5) recommend that there should be psychological, social, and emotional support for exposed HCWs taking PEP.

4.3.2.10. Provision of prophylaxis treatment onsite

Amongst the respondents who were directly exposed to BBFs, 48% (n=34) received PEP from their place of work, while 17% (n=12) did not seek onsite PEP services. About 35% (n=25) of participants did not respond to the question. There is a disparity of onsite uptake among the exposed individuals. Some may choose to seek PEP services from a different facility rather than where exposure occurred. As reported in Rasweswe and Peu (2020:1), nurses were not willing to report accidental occupational exposures to BBFs in their place

of work but preferred to seek HIV PEP at a different health facility. While adherence levels and understanding of pertinent PEP procedures may correspond, most healthcare workers do not finish the suggested 28-day course of medication (Makhado et al. 2022:6).

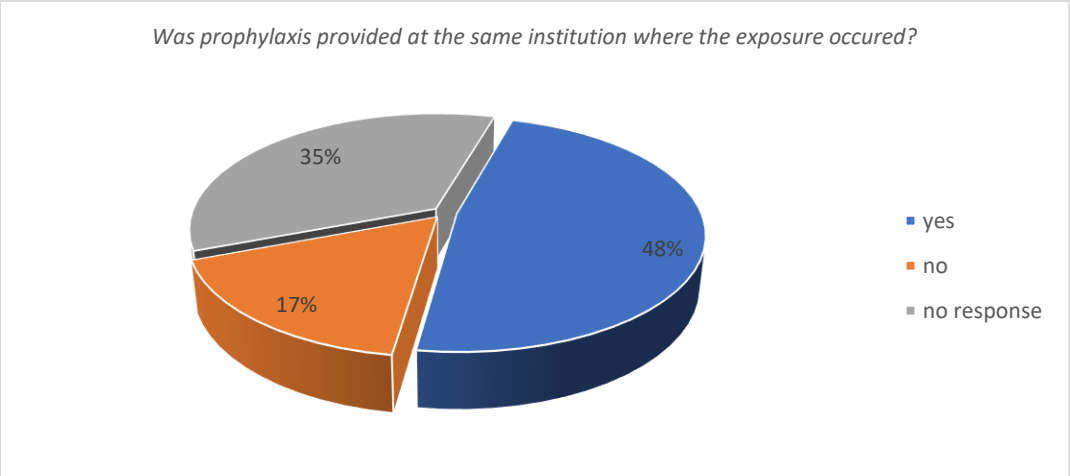

Figure 4.5. Provision of prophylaxis onsite

4.3.2.11. Provision of counselling post exposure

Accordingly, ART adherence challenges are to be identified and addressed using comprehensive adherence counselling (Gill, Ndimbii, Otieno-Masaba, Ouma, Jabuto & Ochanda 2022:2). The question of whether counselling was provided or not was answered by all respondents. At least 54% (n=38) of respondents acknowledged that counselling was offered on risks, benefits, side effects and the importance of adherence before initiation of the PEP regimen. Only 7% (n=5) indicated that counselling was not provided. HCWs who choose to take PEP in the event of occupational exposure should receive sufficient information and a counselling session to help them limit HIV transmission and make the most of PEP (Adebimpe 2018:107).

4.3.2.12. Completion of prescribed PEP course

Over half of the respondents, 51% (n=36), indicated that they finished the course of PEP as prescribed, while 8% (n=6) mentioned that they could not complete the course. About 41% (n=29) did not respond to the question, which could be that they never had to be on PEP, or some had sought the services elsewhere. The reasons for not completing PEP

could vary from person to person. Accordingly, experiencing side effects, HIV stigma and fear of reporting, HCWs not believing they needed PEP, and in some cases, HCWs stopping PEP therapy because they tested negative, which justified the need to continue treatment, are some reasons why people do not adhere to or complete treatment (Makhado et al. 2022:5).

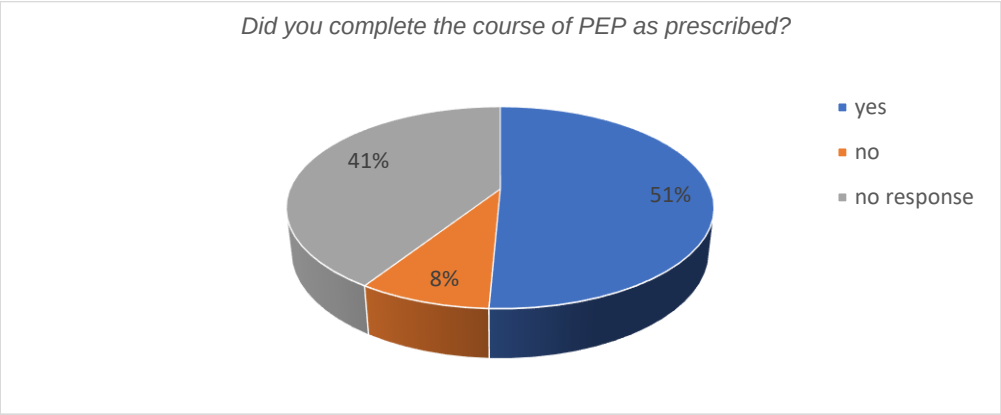

Figure 4.6. PEP course completion

4.3.2.13. Experience of PEP side effects

A proportion of 38% (n=27) of respondents agreed to have experienced some form of side effects of PEP while on therapy. At least 23.9% (n=17) did not report any side effects, and 38% (n=27) were not sure whether they experienced side effects or not. Adebimpe (2018:107) suggests that anti-retroviral medication side effects may be the cause of non-adherence to the PEP regimen even in cases when a decision has been made.

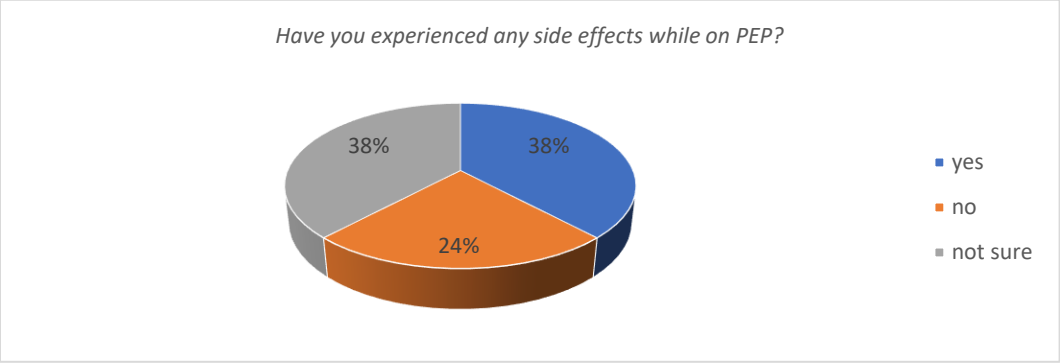

Figure 4.7. Experience of PEP side effects

4.3.3. Part 3: Attitudes towards PEP

Part 3 had seven (7) questions. All participants answered all questions in part 3. The questions took a Likert scale format whereby the participants were required to respond with either agree, disagree, or unsure. The intended purpose of the questions was to determine respondents' attitudes towards HIV PEP. A varied response pattern was depicted, with a few recording a ‘not sure’ response. At most, respondents have shown a positive attitude towards PEP. However, it is questionable if having a positive mindset stem from knowing PEP well enough to reduce the risk of infection or from understanding PEP in general (Makhado et al. 2022:5).

4.3.3.1. Perceptions on the likelihood of PEP to reduce chances of HIV infection

An average of 47% (n=33) believe that PEP will reduce the likelihood of HIV. About 13% (n=9) disagreed, while 39% (n=28) of those who responded were not sure if PEP could reduce the chances of acquiring HIV infection. Only one did not respond to the statement. It is, however, a concern that such a high number of respondents had a negative perception of PEP.

4.3.3.2. The effectiveness of PPE in preventing HIV

The respondents were assessed to establish their perception and attitudes towards using PPE while performing duties which expose them to patients’ blood and body fluids. A proportion of 86% (n=61) agree that the use of PPE is an effective measure to prevent the likelihood of HIV infection. A minimum of 3% (n=2) did not agree, and 11% (n=8) responded that they were not sure. In healthcare facilities, wearing personal protective equipment (PPE) and enforcing its use to reduce contact with blood and bodily fluids is an age-old custom (Aigbodion et al. 2019:5). PPEs constitute specialised clothes that HCWs wear while performing clinical work to protect themselves from infection and act as a physical barrier when they come into contact with potentially infectious materials such as blood, body fluids or discharges, non-intact skin or mucous membranes, soiled objects, and contaminated surfaces or equipment (Madziatera, Msofi, Phiri, Mkandawire & Comber 2020:124).

4.3.3.3. Support improves compliance

A more significant proportion of respondents, 73% (n=52), agreed that support from colleagues is vital in assisting affected individuals through the effort of implementing the PEP guidelines optimally. About 17% (n=12) did not agree to this form of support, with 10% (n=7) recording that they were unsure if support from colleagues would improve compliance. The level of support seems to be viewed in different ways but is appreciated by many. Makhado et al. (2022:6) allude to the fact that lack of understanding of PEP protocols highlights the value of follow-ups, which can increase adherence and reduce PEP adverse effects by offering support.

4.3.3.4. Perceptions on immediate management

The respondents' opinion on the immediate management post exposure to BFFs was assessed. A proportion of 76% (n=54) responded positively to the notion of initiating PEP even after performing first aid. A minimum of 21% (n=15) disagree, meaning these respondents think that after taking first aid measures post exposure to BFFs, there may not be a need to continue taking the PEP regimen, while 3% (n=2) of respondents seemed to be unsure. PEP is regarded as a possible link to other prevention options such as pre-exposure prophylaxis, for individuals who are constantly exposed to potential HIV infection or a bridge for individuals with short-term prevention needs (Ayieko, Petersen, Kamya & Havlir 2022:1). Most of the respondents in this study gave the impression that they will initiate PEP, even after performing first aid.

4.3.3.5. Awareness of PEP indication

Eighty-six per cent (n=61) seem to lack awareness of the actual indication for PEP. They indicated that PEP should be initiated even when the source patient is HIV negative. At least 10% (n=7) were correct to disagree with the initiation of PEP if the source patient is HIV negative. The remaining 4% (n=3) were not sure. On the other hand, these respondents showed a positive attitude to using PEP as they think it should be indicated for any exposure to risky exposures. It indicates that, even though they know about PEP, there is still a gap in the overall knowledge of PEP criteria and legibility.

4.3.4. Part 4: Compliance towards PEP

This marked the last portion of the questionnaire with at least five questions. The questions were aimed at establishing the level and even the behavioural intention of compliance with PEP amongst the respondents. The format of this part was also a Likert scale where participants had to respond with either agree or disagree. All the questions were answered.

4.3.4.1. Intentions to report and follow guidelines

Responding to the statement on reporting and following PEP guidelines in case of exposure to BBFs, 94% (n=67) agree, while 6% (n=4) disagree. The more significant proportion of respondents seemed to be willing to report and follow the guidelines as outlined, albeit the study revealed that some of those who were exposed to the BBFs did not report the incidences. This means that individuals are aware of procedures to follow but consciously decide not to comply for various reasons.

4.3.4.2. Completion of the course of PEP

The importance of completing the PEP course was supported by 99% (n=70) with only one (1) disagreeing. It indicates that respondents understand the importance of completing the course of the PEP regimen even though not all who commence with the therapy will complete it.

4.3.4.3. PEP guidelines are important for the prevention of HIV in the workplace

All respondents 100% (n=71) perceive the PEP guidelines as important for preventing HIV in the workplace. This response displays a positive attitude towards the availability and importance of the guidelines. Good awareness of PEP but poor implementation of guidelines was noted in this study.

4.3.4.4. Importance of follow up test for HIV

After completion of the regimen, 97% (n=69) agree that it is important to have a follow up HIV test to verify that the individual is not infected, and that PEP was effective. In comparison, 3% (n=2) disagreed with the statement. Most of the respondents demonstrated a positive attitude towards a follow up test post completion of prophylaxis.

Those who do not see the need for a follow up test may be the ones that would, in some instances, test elsewhere and confirm their negative status and decide to stop the treatment as was found in Makhado et al. (2022:4).

4.3.4.5. Disclosure of chronic conditions

A substantial number of respondents, 89% (n=63), displayed a positive attitude with respect to the disclosure of any chronic conditions which is aimed to assist the healthcare provider offering PEP services to manage and monitor the affected individual optimally. About 11% (n=8) were not in favour of the requirement, which may imply that since the since the PEP unit employees are their peers, they question whether confidentiality will be upheld (Rasweswe & Peu 2020:4).

4.5. QUALITATIVE STRAND

Maternity wards are usually too busy, and difficult to secure time to sit with the midwifery practitioners to conduct semi-structured interviews. Although the midwifery practitioners showed interest in participating, it seemed challenging to secure an appointment due to its unpredictable state of business. To avoid disruption of maternity services, the researcher requested the mobile numbers of participants who signed the consent forms to call them at their convenience. The participants were conveniently sampled as most participated in the quantitative study. Some midwifery practitioners were interviewed face-to-face in the duty room, and the sessions were recorded. Privacy was maintained throughout the interviews as all staff on duty in the same shift were made aware of the interviews in progress.

The telephonic interviews were also conducted with two occupational health and safety practitioners from two of the three selected hospitals. The researcher planned to interview three OHS practitioners, one from each hospital but could not get consent from one. The total number of midwifery practitioners who participated was 13, and two OHS practitioners. Amongst the midwifery practitioners that participated in the semi-structured interviews, only two did not take part in quantitative data collection.

In this mixed method study, the interviews were conducted with midwifery practitioners to expand on information where the quantitative method could not elicit the desired data.

Each interview took seven to ten minutes at a maximum and was conducted over one day at each selected site. Other participants were interviewed telephonically during their off-duty period as arranged. Only seven questions were asked, as outlined in the interview guide.

4.5.1. Data management

Data was structured using alphanumeric code as pseudo names. The pseudo names were created in relation to the site of participation, e.g., MP_01. Upon completion of interviews, all transcripts and tape recorder were kept under a locked drawer. Access to stored raw data was restricted to the researcher only. The researcher used a private room to listen to recorded interviews while transcribing data word for word. The researcher first listened to the recordings and transcribed data. Following transcription, the researcher, together with the co-coder repeatedly read the verbatim notes to eventually categorise themes derived from the interviews.

4.5.2. Socio demographic information of participants

All participants were permanently employed at their respective selected study sites.

- **Age of participants**

Those who participated in semi-structured interviews ranged from 25 to 55 years old. Figure 4.8. below is a demonstration of the age distribution of participants in the qualitative data collection.

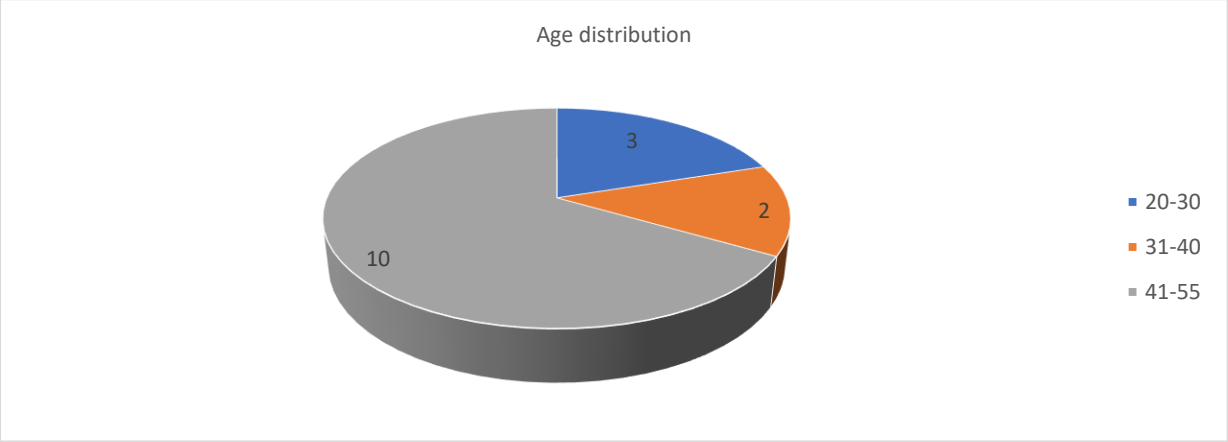

Figure 4.8. Participants' age

- **Gender**

The interviews were conducted with female participants only. The researcher did not see any male midwifery practitioners in all three hospitals during the interviews. This supports the ideology that male midwifery practitioners are scarce.

- **Professional status**

Included in the semi-structured interviews were two (2) occupational health and safety practitioners and thirteen (13) registered midwives. The researcher had envisaged including three OHS practitioners, each to represent the three selected hospitals but could not secure an opportunity to interview with the OHS practitioner from one study setting. In all three hospitals, the OHS unit was run by one OHS practitioner assisted by either a staff nurse or an assistant nurse. The midwifery practitioners who participated in the interviews possessed either a qualification in post basic midwifery or a basic midwifery qualification. The post basic qualification in midwifery was held by older and longer service bearers in the field of midwifery. The occupational health and safety practitioners had a basic qualification in nursing and midwifery and an additional qualification in occupational health and safety. Figure 4.9. indicates the qualifications of participants.

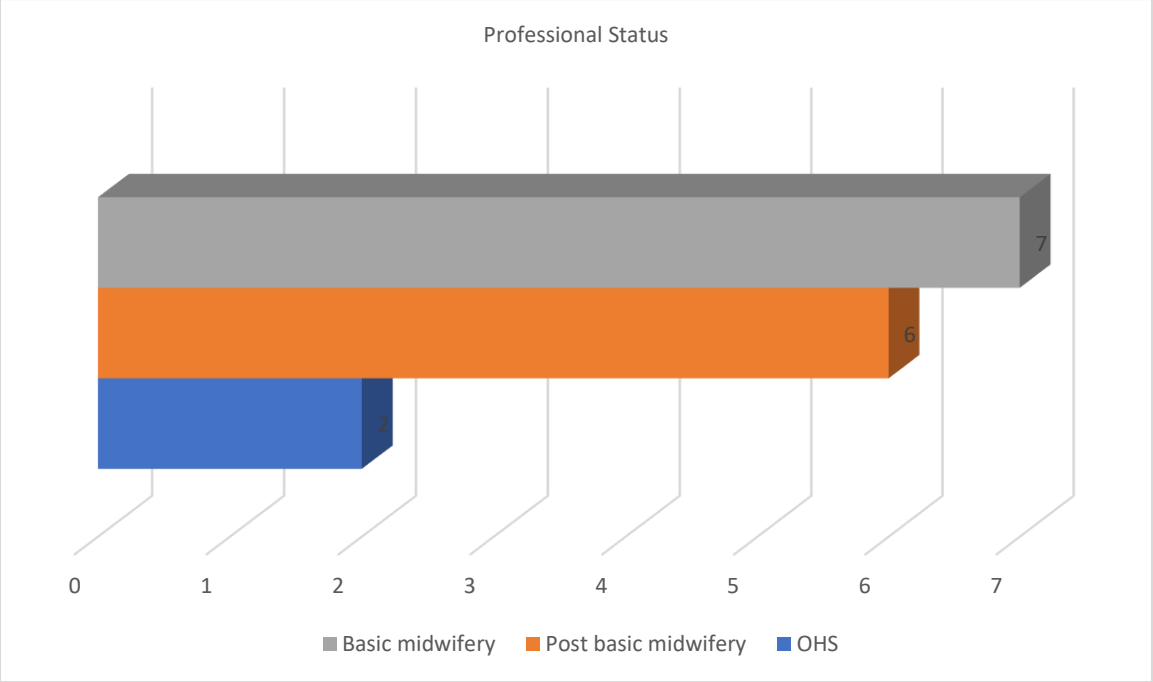

Figure 4.9. Participants' qualifications

- **Characteristics of participants**

Participants in the semi-structured interview were about 15, composed of midwifery and occupational health and safety practitioners. A synopsis of the characteristics of participants is illustrated in Table 4.2 below.

Table 4.2. Characteristics of participants

Participant professional role:	**Number**
Midwifery practitioner	13
OHS practitioner	2
Gender	
Males	0
Females	15
Age range	
20-30	3
30-40	2
40-55	10
Marital status:	
Not married	8
Married	7
Divorced	0
Widowed	0
Professional status:	
Basic Midwifery qualification	6
Post basic midwifery qualification	7
Occupational health & safety qualification	2
Experience in years	
Two to five	3
Six to ten	3
>10	9

4.5.3. Steps followed in analysing qualitative data

The researcher followed a six-step/phase approach in conducting a thematic analysis of collected data from the semi-structured interviews. The six phases as described in Nowell et al. (2017:4) and are: (i) familiarising with data; (ii) generating initial codes;(iii) searching for themes; (iv) reviewing themes; (v) defining and naming themes; and finally, (vi) producing report. Each phase is briefly discussed below.

- **Phase 1: Familiarising with data**

Braun and Clarke (2006) in Nowell et al. (2017:5) emphasise the importance of researchers immersing themselves in the data to familiarise themselves with the depth and breadth of the content. The researcher listened to the recordings from semi-structured interviews where data was transcribed into texts word for word, deliberately familiarising with all collected data. The transcribed texts were read repeatedly to capture more interesting and relevant information the participants shared. Some of the data were compared with the responses from the collected quantitative data, which were in a way corroborating or triangulating what was captured in the qualitative data collection phase.

- **Phase 2: Generating initial codes**

A code is a word or brief phrase that gives part of language-based or visual data a symbolic assignment of a summative, salient, essence-capturing, and/or emotive feature (Xu & Zammit 2020:2). In this stage, the first codes are created from the data, a conceptual process that necessitates constant data review on the part of the researchers (Nowell et al. 2017:5). The researcher began by coding the participants according to the study site and date in which the interviews were conducted. Prior to delving into analysing raw data, the researcher anonymised participants' names using codes, for example, the first alphabet of the code represented the site and P for the participant with an allocated number in terms of the sequence of interviews per study site.

Coding allows the researcher to simplify and apply a streamlined approach to specific data characteristics (Nowell, Norris, White & Moules 2017:6). The researcher and the co-coder agreed to start with deductive coding in relation to the research question and the compliance assessment model (CAM) which aimed to address the knowledge and

perceptions of midwifery practitioners regarding the PEP guidelines. Following the deductive phase, the inductive coding from the interviews was engaged.

- **Phase 3: Searching for themes**

A theme is a particular pattern that finds larger patterns of common meaning throughout the data set and captures important details about the data in relation to the research objectives (Xu & Zammit 2020:2). A hybrid approach to analysis which combines deductive and inductive coding was used. Some of the themes were derived from the existing research questions and the elements from the compliance assessment model (CAM), which is the framework overarching this study, hence the deductive approach was applied. This hybrid inductive/deductive methodology aligns well with the pragmatic epistemology that guides the researcher's choice of methods based on their ability to best address the research issues (Roberts, Dowell & Nie 2019:2). Additionally, inductive methods look for patterns in the facts or unprocessed data, which made it possible for any unexpected themes to emerge throughout the coding process and maybe lead to more insightful data analysis (Roberts et al. 2019:2). An amalgamation of inductive and deductive coding signifies an equitable and all-encompassing perspective of the information, rather than solely depending on the prevalence of codes that have been stripped of their contextual meaning (Xu & Zammit 2020:3).

The researcher categorised raw recorded data and transcribed all quotations verbatim into themes. Raw data were first grouped according to the interview site, that is, the researcher tabled data into three columns and coded it according to the selected research sites.

- **Phase 4: Reviewing themes**

The researcher and the co-coder reviewed and agreed on the categorised themes, demonstrating a true representation and evidence of relevant themes. To achieve theme saturation, this required reading and rereading the subset of transcripts several times (Roberts et al. 2019:5). There are two steps involved in reviewing themes: (i) determining whether the themes effectively convey the substance of the coded data in connection to the research question, and (ii) determining whether the themes are applicable throughout

the entire data set (Xu & Zammit 2020:3). This data analysis approach included both deductive and inductive data analysis methods.

- **Phase 5: Defining and naming themes**

Xu et al. (2020:3) summarises process of defining and naming as the phase in which each theme is given a distinctive and educative name. All themes were defined and named in agreement with the co-coder. The definition included a thorough analysis of what each theme would mean in relevance to the research questions. Finalising the themes is impossible if there are text sections that are obviously pertinent to the study question yet are left out (Nowell et al. 2017). In this study, any data that was not relevant and not providing any new evidence was discarded.

- **Phase 6: Producing a report**

This is the final step of thematic analysis. Elements of the writing process have already begun through obtaining notes, outlining themes, and choosing representative data extracts in earlier rounds (Kiger & Varpio 2020:7).

4.5.4. Data interpretation

The researcher followed Schutz's postulate of subjective interpretation in line with preserving the participant's subjective point of view and acknowledging the context within which the phenomenon was studied (Fereday & Muir-Cochrane 2006:82). The interview responses from participants' word for word were quoted under each theme. To strengthen interpretive rigor, the researcher is required to demonstrate clearly how interpretations of the data have been achieved and to illustrate findings with quotations from the raw data wherein the participants' reflections are conveyed in their own words (Fereday et al. 2006:82). Using the hybrid approach to data analysis, the researcher with the assistance of a co-coder derived three themes and subthemes as presented in Figure 4.10. Themes and subthemes are discussed below.

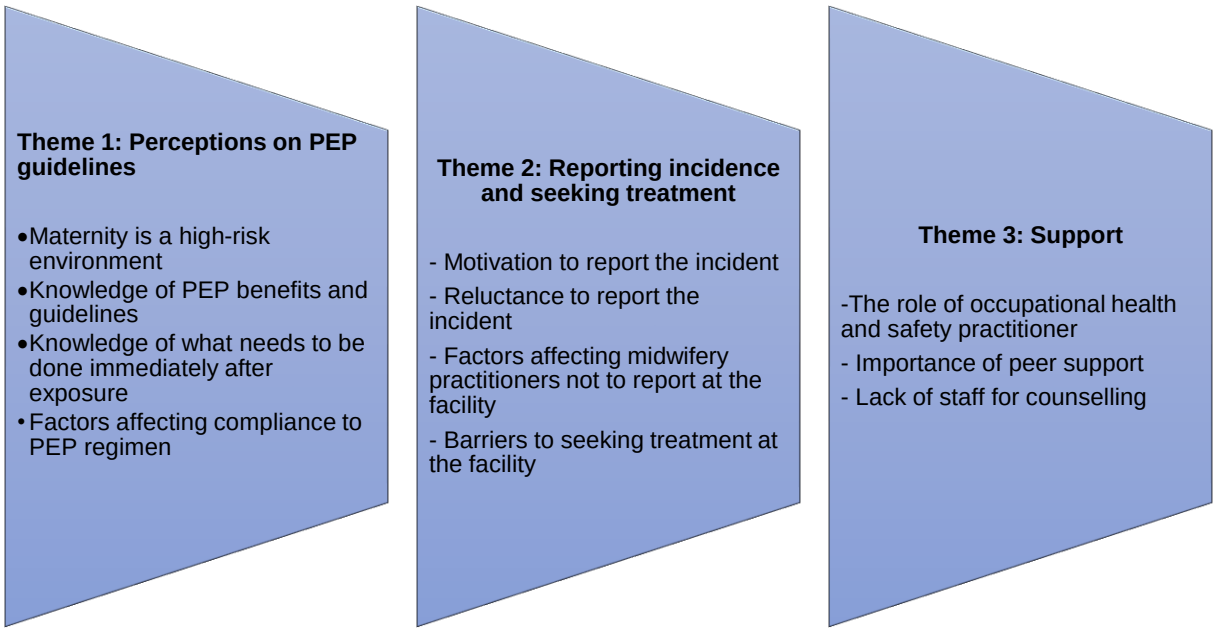

Figure 4.10. Qualitative study Themes and Subthemes

4.5.4.1. Theme 1: Perceptions of PEP guidelines

- **Maternity is a high-risk environment**

According to the OHS practitioners in the two selected hospitals, there are generally minimal reports from the maternity units. If any incidence is reported, it would be that of a nursing student or intern, which they attribute to a lack of experience and poor skill. The midwifery practitioners reiterated that incidences occur, but not all are reported. Similarly, in the study among primary HCWs, an estimated 82% of total exposures were not reported in the Johannesburg health district of SA (Mbah, Elabor & Omole 2020:3). The participants asserted that there is the frequency of accidental exposures among colleagues in the maternity units which occur mostly during suturing perineal tears and episiotomies. The study at the Ho Teaching Hospital of Ghana revealed that of the 199 HCWs participants, 91.5% reported being at risk of occupational exposure to HIV, and 34.6% had experienced at least one occupational exposure in the last 12 months (Suglo et al. 2021:210). It is evident that midwifery practitioners as a cohort of HCWs, are at high risk of occupational exposure to BBFs. However, the report from OHS practitioners varies vastly from the account from midwifery practitioners as quoted hereunder.

TP_7… 'incidences happen in the labour unit, for example, not so long ago. I was suturing the woman's perineum and realised that there was blood inside the glove. I doffed the gloves, washed my hands, and didn't notice any cut on my hands and continued with my work, and I did not see the need to report.'

TP_6… 'the most common exposure in labour ward is through needle pricks during suturing, the first thing we advise the colleague in the shift is to put the injured finger under running tap water and squeeze out the blood. We encourage them to report, but sometimes others decide not to.

MP_3 'I once had liquor splash on my face, but because I was wearing a mask and my glasses, I just washed off the face and did not report or even test post exposure.'

- **Knowledge of PEP benefits and guidelines**

The participants displayed some knowledge of the PEP guidelines even though the implementation seemed to be a challenge. All participants provided a straightforward narrative of how the guidelines must be complied with. There is an understanding that all exposed individuals should report and follow the guidelines.

Participants gave the impression that when one commences the PEP regimen, they should complete the course, which they knew was only for 28 days. The participants were aware of the effectiveness of PEP post exposure to BBFs and agreed that PEP can potentially prolong life. This is congruent with the study in Gondor, Ethiopia, where 98.5% of participants agree on the importance of PEP for HIV, and 78.5% believe it can reduce the probability of being infected (Mmeremikwu et al. 2020:37).

TP_2 'It is very important that one completes the course despite the side effects of the ARVs to fully prevent HIV infection.

KP_6 'even though taking PEP is not nice, a full course has to be completed for the sake of one's health.'

TP_1 'The first thing is to report the incident to the shift leader and go to the casualty. It is important that you start PEP immediately to prevent infection.'

KP_4 'I think everyone should just be covered with PEP, even if both the patient and the midwife tested HIV negative at the time of the incident. What if one of them is on window period?'

The PEP guidelines are perceived as a useful guide in providing steps to follow in preventing the transmission of HIV. Participants are aware of the high risk inherent in their daily routines in the maternity unit, especially during delivery and suturing of vaginal tears and episiotomies**.** The participants acknowledge the benefits of PEP.

- **Knowledge of what needs to be done immediately after exposure**

First aid provides the participants with reassurance that the likelihood of transmission is reduced. The participants reported that their immediate response to the probable exposure is to perform first aid, which includes putting the affected finger under running tap water. This is congruent with the findings in Suglo et al. (2021:210), where 58.8% of study participants had experienced either a needle-stick injury or a blood-splash during work, with 82.1% of those exposed, mentioning that they washed the site of injury thoroughly with soap and under running water. At the same time, other midwifery practitioners squeeze the blood out of the cut while others do not, even though they did not mention their reasons for not squeezing. The PEP guidelines did not make any provision for first aid as a guide, although it seems like common knowledge and practice by the majority.

MP_7 'I have never been exposed to a needle prick, but if a colleague gets an accidental prick, we advise them to just wash it under running water quickly before going to report at casualty. Some do not even go to report after that.'

TP_2 'Immediately after I was pricked while suturing the woman, I went to the tap and ran the water over the cut while squeezing the blood out.'

KP_6 'It is important to quickly put the wound under running water and squeeze the blood out after an injury.'

- **Factors affecting compliance with the PEP regimen**

The perceptions about PEP are positive, considering the importance and the aims it was designed for. This is like what was found by Shakeel et al. (2022:10), whereby the practice of HIV Post-Exposure Prophylaxis among most healthcare professionals in Pakistan demonstrated an affirmative approach toward HIV PEP owing to their adequate level of knowledge. The general perceptions are influenced by interactions among colleagues when accidental exposures occur. The information shared amongst colleagues regarding

post exposure prophylaxis drugs can be a motivation or a discouragement to enrolment in the programme. Some participants alluded that talking about side effects such as hallucinations and probable future resistance to drugs makes exposed individuals not continue with PEP even after reporting. There are also misconceptions shared about the mechanisms of short-term drug therapy as expressed by one of the participants relating to drug resistance.

MP_10 'Just a week on the PEP regimen, I started experiencing nightmares and remembered what my colleagues said about the mental effect of these drugs, I then stopped taking them before I could experience hallucinations.'

MP_3 'My worry about this PEP is that if I keep getting exposed and taking them will I not end up getting resistance? We discuss these things with colleagues.'

Compliance with the PEP guidelines is understood to be of paramount importance by the participants. There is an expression of mixed feelings about following the procedures as outlined in the guidelines. Even though some participants report incidences of exposure to blood and body fluids, they do not always complete the course as prescribed or even do a follow up test post completion of prophylaxis. In Uganda, thirty-one (31) % of those who initiated PEP did not complete the treatment regimen. Of those who did not complete treatment, 78% cited the side effects of the drugs as the reason (Alitubeera et al. 2021:5).

However, a remarkable 100% complete adherence for four (4) weeks was recorded among those placed on HIV PEP in the other tertiary hospital in Nigeria (Mmeremikwu et al. 2020:38). As per the study conducted in Tanzania, 22.3% of nurses did not complete PEP. The primary reason for discontinuation of HIV- PEP among those who used the drug was fear of adverse effects of PEP (Degavi et al. 2020:5).

4.5.4.2. Theme 2: Reporting incidence and seeking treatment

- **Motivation to report the incidence**

The motivation to report accidental exposures to BBFs may vary from one midwifery practitioner to the other. Accidental exposures to BBFs are regarded as an injury that must be reported per the Compensation for Occupational Injuries and Disease Act (COIDA). According to the OHS practitioners, the requirement to complete injury on duty

(IOD) forms as part of the procedure could be one of the main reasons why midwifery practitioners report. Some are genuinely scared for their health and would report that they can start a PEP regimen as soon as possible. Furthermore, it is better to report the incident so that the employee may be supported should there be any side effects related to PEP drugs which could impact the employee's ability to function optimally.

OHS_M 'I usually get to know about the exposed individual from the registry department where they had opened a file and completed Injury on duty forms in accordance with the Compensation for Occupational Injuries and Disease Act (COIDA).'

OHSC_T 'The only circumstance where I would see a midwife is when they bring the injury on duty forms because I have to sign and facilitate the submission in case of compensation.'

- **Reluctance to report the incidence**

The procedure to report includes starting at the accident and emergency department, where a clinician will procedurally do counselling, draw blood from the affected individual and determine the source patient's HIV status, wait for the blood results, and if tested negative, be provided with PEP therapy. The reporting continues to the occupational health and safety unit to complete the injury on duty forms (WCL2) in accordance with the COIDA. The participants are aware and understand the importance of following guidelines and procedures but are just reluctant to report, unlike in the study among healthcare professionals in Pakistan, where the major reasons for not reporting the occupational exposures by the respondents were: lacking the knowledge of policies for reporting, fear of stigma and discrimination, lack of support and motivation to report and lack of accepting the worth of reporting experiences (Shakeel et al. 2022:5).

OHS_T 'You know the midwives don't like to report, I was also a midwife before working here, but I believe they will come because they need me to complete their injury on duty forms. In the five years I've been working here, I haven't really had a midwife coming to me for this. I believe there are no incidences to report, or they just don't report.'

It is evident that incidences of exposure to BFFs do occur as other cadres, such as medical interns and student midwives from the maternity units, are seen to be reporting.

OHS_M 'In the period that I have been working here, I have mostly seen the student nurses here reporting the injuries... in the past year, no midwives have ever come for reporting exposure to blood and body fluids.'

OHS_T 'In this department, I have mostly seen the medical interns who were pricked by a needle while suturing in the maternity ward, but as for midwives it is very rare.'

- **Barriers to seeking treatment at the facility**

The importance of follow up and reporting of side effects was clearly understood. However, most of them reported that they would rather consult with their private doctors to be managed effectively. The waiting times at the accident and emergency department discourage those who need to see the doctor for side effect management. Although priority will be given to staff members, the waiting is still considered too long. Compliance with the PEP guidelines using a different site or PEP service other than the individual's place of work is still compliance and an individual's right. It is evident, as expressed by some participants, that they preferred to use their private doctors for PEP services. This is aligned with the study by Peu and Rasweswe (2020:4), which revealed that some of the nurses preferred to seek HIV PEP from other facilities for confidentiality reasons.

MP_9 'I would rather use my own medical aid to see my doctor than come to work and go wait at casualty to be seen after a long wait.'

- **Factors affecting midwives not to report at facility**

The participants find the use of guidelines easy to follow, although they criticise the reporting process as being unnecessarily long. The guidelines are clear and concise. Some participants just choose to get the PEP regimen from their private doctors, or if they do start them at their respective places of work, they do not go back for follow up to report any side effects experienced. They would instead go consult their GPs for the management of side effects. Accordingly, underreporting of BBF exposures is prevalent and may range between 22% and 82% of incidents (Mbah et al. 2020:3).

TP_3 'Management of side effects was achieved through consulting with my private doctor. A colleague advised that going to casualty would cause me to wait longer, which I experienced when I went there for the first time to report the incident and test for HIV and HBV.'

TP_1'…having to wait at casualty for the blood results while panicking! I wish they could just do a rapid test, give PEP, and you leave. I hate waiting.'

MP_1 'Colleagues share their previous experience about the process for reporting, which is so long and discouraging, hence you see, some people prefer to go to their private doctor. Casualty is always packed, no doctor is servicing staff only, so you wait.'

Long waiting times are expressed as one of the demotivating factors in reporting the incidences in the same facility. The findings of Mbah et al. (2020:3) suggest that primary healthcare workers in the Johannesburg health district did not report the incidents primarily because of a lack of time and perceptions that the incident of BBF exposure was low risk. According to Zhang, Li, Guan, Fan, Li, Zhang, and Yuan (2022:8), the reporting procedure was often described as burdensome, the second most common reason for not reporting.

4.5.4.3. Theme 3: Support

- **Role of OHS practitioners**

The OHS practitioners have a broader role in the selected hospitals. They are involved in other safety domains, including but not limited to infrastructure safety, and participate in other committees such as Quality, IPC and more. The immediate reporting of the exposures to blood and body fluids is channelled to the accident and emergency department due to their 24-hour service delivery as well as the availability of the clinician to carry out the immediate management and prescription of ART.

OHS_T 'part of my duty is to coordinate and facilitate the reporting of injury on duty and help the personnel member to complete the relevant forms.'

OHS_T 'I also monitor that the protocol for the management of exposure to blood and body fluids is complied with. Once a member of staff is pricked with a needle, the protocol instructs that tests be done for HBV and HIV at the same time.'

OHS_M 'after identifying personnel who reported to casualty after injury, I make follow up and remind them to come back to report any side effects and do follow up tests'.

- **Importance of peer support**

In a study assessing in-take, completion rates, and reasons for non-completion of PEP among HCWs at a regional referral hospital, lack of social support in female participants was a consequence (Muzoora, Atwine, Nyanzi, & Yadesa 2022:13). In a community where people work together, it is easy to influence one another's behaviour to provide support. Midwifery practitioners spend much of their time at work due to long hours per shift. They tend to rely on one another for support. When these exposures to BBFs occur, colleagues become the primary source of support. They report to one another before they decide to report according to the available guidelines. The colleagues assess the level of danger and influence the exposed individual on what needs to be done. In addition, they encourage each other to complete treatment.

KP_2 'We guide each other about what to do post exposure, starting with performing first aid and then reporting.'

TP_5 '…when I was taking my PEP, I suffered side effects, the worst was insomnia, and my colleagues advised me to change the times for taking the meds, and it got better.'

In the interest of supporting one another, colleagues also share their past experiences, which could drive the exposed individuals to decide to report or continue with the PEP regimen if prescribed. Some have been exposed and followed the guidelines as required and even completed the course of the therapy. These are the ones who can provide effective support to the newly exposed individuals.

TP_2 'One of my colleagues told me about the side effects she had, which were very bad for her but still, she encouraged me to adhere to the course until I completed it because she said she also completed the course.'

- **Lack of staff for counselling**

Counselling is vital to post exposure to BBFs, and it is also a first step requirement according to the PEP guidelines. To avoid potential HIV seroconversion, counselling on adverse events and sensitisation of HCWs on good occupational safety and infection control measures and dangers of PEP non-completion should be emphasised. In addition, counselling on adherence and adverse effects of PEP and psychosocial support could be promoted before and during PEP intake by HCWs (Muzoora et al. 2022:12). In these

selected sites of the study, counselling is provided by the casualty clinician before drawing blood from the exposed individual. However, the participants feel that counselling is not done optimally to make an individual understand the dangers and potential risks and to prepare them for any negative outcome should there be sera-conversion. There is an expression that the doctors take it for granted that midwifery practitioners have the knowledge and understanding of the process. They forget that, in that instance, the midwifery practitioner is a vulnerable patient and not only a colleague.

TP_3 'Counselling is never proper, the doctor at casualty is always busy and does not only see the staff but patients too. You get to casualty and wait for the doctor and when he comes, he talks while taking bloods, no time to allay the anxieties you might be having.'

MP_11 'Counselling is very casual; the doctor doesn't have time. Mostly what is covered is the side effects of medication, very less about your emotional wellbeing.'

4.6. RESEARCH RESULTS DISCUSSION

4.6.1. Knowledge and implementation of PEP guidelines

This study revealed that an overwhelming 100% of midwifery practitioners have heard of PEP, albeit there is still a gap in knowledge among others. This is unlike findings among nurses in Bhutan, where only 51.1% had heard about PEP against HIV. A similar study in Gaborone reported that 97.4% of the study participants were aware of HIV PEP (Bareki & Tenego 2018:1). In Ethiopia, a remarkable 91.9% of HCWs heard about PEP (Degavi et al. 2020:4). Furthermore, a study in Dessie Referral Hospital, Ethiopia recorded that greater than 90.3% participants had heard about PEP for HIV (Ademe, Mohammed & Edmealem 2020:36). These findings confirm that most midwifery practitioners have some reasonable knowledge of PEP even though the report about PEP practice is suboptimal. Having a good knowledge base about HIV PEP does not guarantee to start or completion of PEP by HCWs (Bareki & Tenego 2018:6).

Most respondents in this study, 72% (n=51) did not know if the guidelines were available in their unit. This is indicative of the poor knowledge of such a vital piece of information or guide designed to protect and enhance the wellness of personnel while performing their duties. Over half of the respondents in this study had adequate knowledge. In

contrast, a gap of knowledge was identified among others, which is slightly better than more than half of HCWs in Tanzania who had inadequate overall knowledge of HIV PEP (Kimaro et al. 2018:5). On the other hand, 91.8% of HCWs in South-eastern Nigeria tertiary hospital (which included midwives), had poor knowledge of PEP (Mmeremikwu, Ekwunife, Mefoh, Mmeremikwu & Ojide 2020:34).

4.6.2. Prevalence of occupational exposure to BBFs in maternity units

Incidents of occupational exposure to BBFs are high in the maternity units. Over 70% of participants in this study were directly exposed to BBFs which is extremely higher than what was reported in Butajira Town, Southern Ethiopia, where 7.9% of the cohort practising midwifery was exposed (Mulatu & Hussen 2019:3). This outcome was also higher than in Tanzania where 50.6% participants experienced occupational exposure (Kimaro, Adinan, Damian & Njau 2018:1). Another study in Ethiopia, reported that 67.1% of the HCWs have been exposed to HIV risky conditions (Ademe & Edmealem 2020:36).

The procedure of reporting accidental exposures is widely known in the maternity units of the selected sites. This is unlike in Ghana, where 10% of participants' reasons for not reporting vulnerability included participants not knowing whom to report to (Suglo et al. 2021:210). This study found that, among the 70% of participants who were directly exposed to BBFs, 51% reported the incidents, which is lower than what was reported in Tanzania's Singida Region, of 121 exposed participants, 83 (68.6%) reported the exposure incident to management (Kimaro, Adinan, Damian & Njau 2018:5). This outcome is also comparable with the findings in Ghana's teaching hospital with 51.3% of respondents who were exposed did not report their exposure (Suglo et al. 2021:211). The current study detected high levels of occupational exposures with less reporting behaviour. Reporting BBF's exposures has many values, such as it allows the affected HCW to receive appropriate and prompt medical assessment, counselling and treatment and post-exposure prophylaxis, and it enables the award of appropriate compensation as prescribed in the Compensation for Occupational Injuries and Diseases Act (COIDA) (Mbah et al. 2020:3). Low reporting rates provide wrong statistics and underreported exposures will remain unknown leading to low rates of PEP uptake (Peu & Rasweswe 2020:4).

4.6.3. Perceptions about PEP

A larger proportion (86%) of participants had a positive attitude toward PEP, meaning they will opt to use PEP should they experience direct occupational exposure. Though a positive attitude towards PEP is commendable, it can only be appreciated when it translates to good knowledge and practice (Mmeremikwu et al. 2020:37). In this study, PEP instead scored inadequately. A positive attitude towards PEP was expressed mainly with the emphasis that it is a short course and is effective in reducing the likelihood of HIV. This finding is aligned with the findings of South-Eastern Nigerian health workers (96.2%) giving affirmation of the positive effect of PEP to reduce HIV infection (Mmeremikwi et al. 2020:37). Also, in Dessie Referral Hospital Ethiopia, a significant 75.2%, of the study participants had a positive attitude about PEP (Ademe & Edmealem 2020:35).

Most participants in this study reported that post exposure, they ran the exposed area under running tap water to clean it. In contrast, others mentioned that they squeezed the blood out, which is not recommended as it may cause further tissue injury, which in turn may instead increase the risk of infection (Babanawo, Ibrahim, Bahar, Adomah-Afari & Maya 2018:8). This is consistent with the findings from Uganda where 77% of exposed HCWs cleaned under running water immediately after the exposure, 19% squeezed exposure site (Alitubeera, Mutanda, Aggrey, Kobusingye, Biribawa, Tusubira, Eyu & Kiwanuka 2021:5). PEP guidelines are clear and concise which should make them implementable. Challenges which the participants have expressed during semi-structured interviews were not from the guidelines per se. Factors which contributed to participants not fully complying with the PEP guidelines were either personal or system based. Personal factors include and are not limited to the participants' reliance and belief in the effect of first aid performance; influence from colleagues' past experiences about side effects; fear of drug resistance; and fear of discovering their HIV status for the first time at their workplace. The latter reasoning was also reported in SA among all categories of nurses, with (3.19%) feared to test HIV positive (Peu & Rasweswe 2020:3). System based factors include the inconvenience of long waiting periods at the accident and emergency unit when reporting, testing, and receiving the PEP package, and the poorly structured counselling processes.

4.6.4. Compliance with HIV PEP

Included in the study were two cohorts of participants representing midwifery practitioners and OHS practitioners. The midwifery practitioners were the subjects of interest from whom the experiences and actual compliance status this study sought to establish. In contrast, the OHS practitioners were envisaged to corroborate the account provided by the midwifery practitioners. PEP comprises first aid, counselling, risk assessment, HIV testing, established informed consent of the exposed individual, and maintaining the confidentiality of the findings, with continuous counselling and support to promote adherence (Makhado & Seakane 2020:9).

This study confirmed that the midwifery practitioners do not always comply with the PEP for HIV guidelines which are supported by the OHS practitioners reporting that they see very few, if none, of the midwifery practitioners presenting at their units report accidental exposures.

While a significant number of midwifery practitioners are accidentally exposed to BBFs during their routine duties, approximately half of them completed the course of therapy, some citing side effects as the reason not to complete if enrolled in the programme. This is congruent with the findings in Tanzania of more than half of respondents had low utilisation of HIV PEP following occupational exposures (Kimaro et al. 2018:5). This finding is higher compared to the findings in Bhutan's only tertiary hospital where out of 95 exposed individuals, only two (2.1%) of them took PEP and both completed the prescribed ARV for 28 days, with (3.2%) worried about side effects (Tshering, Wangchuk & Letho 2020:6). This is also corroborated by the study in Southern East Ethiopia where those respondents that took HIV PEP, 3 (60%) had completed taking correctly. Still, the rest 2 (40%) had failed to complete due to adverse effects of the drugs. In Bule Hora General Hospital, Ethiopia, overall, among 61.6% who had occupational exposure to HIV, 24.3% used HIV PEP (Degavi, Adola, Panari, Pawar & Dereso 2020:4). Compared to the number of respondents in one Nigerian study who reported occupational exposures through needle stick injuries where very few eventually used PEP, the participants in this study were still at a better state of PEP uptake (Adebimpe 2018:107). Low uptake of PEP remains a concern among HCWs globally.

This study's findings are also slightly higher compared to the CDC's estimation that a proportion (17- 47%) of health professionals taking PEP after occupational exposure to HIV positive sources didn't complete a full 4-week course of therapy because of an inability to tolerate the drugs (Mulatu & Hussen 2019:4).

Although it is appreciated that some participants sought PEP services elsewhere, it leaves a gap in reporting reflection as negative. Reporting the exposure will also give the facility accurate data on occupational exposure and the rate of seroconversion, which could be used for planning in-service training, workshops, and seminars on HIV PEP (Babanawo et al. 2018:8).

Most of the participants reported to have experienced some form of side effects and continued to completion of the course. The use of private doctors was also reported to manage side effects, even when the individual had started PEP at their workplace. Most participants in this study admitted to having good access to PEP services 24 hours on site, which is unlike in other places such as Bhutan's tertiary hospital where poor PEP services in the hospital and lack of support to report exposures were reported to be the two leading causes which resulted in low uptake of PEP (Tshering et al. 2020:7).

The role of occupational health and safety practitioners in implementing PEP is not clearly defined, except that they assist the exposed individuals in completing the IOD forms when reporting and making a follow-up on those who enrolled in the PEP programme. Each study setting had one dedicated OHS practitioner who oversees all occupational health and safety hazards in the hospital. The OHS practitioner has multiple functions and participates in multidisciplinary structures of the organisation. The OHS practitioner is clearly not the primary contact post exposure to biological hazards such as BBFs. This study found that the primary and most appreciated form of emotional and psychological support was received from colleagues working together in a unit.

This study found that although participants were aware of PEP guidelines and the availability of PEP onsite, there was a huge gap in reporting, implementation, and practice of the guidelines. This is in consonant with the findings of Rasweswe and Peu (2020:4) among Gauteng nurses on using PEP where a significant gap was identified between HIV PEP guidelines, implementation, and practice.

This study's findings did not display any significant differences in relation to the socio-demographic characteristics of participants, which is like the findings of Aigbodion et al. (2019:4), where there were no significant differences between those who had and those who had not experienced an occupational blood and body fluids exposure (OBBFE) with regard to gender, age group, work experience, familiarity and user friendliness with institutional protocols/policies. For example, the males practising midwifery in these selected sites of study are few, thus making comparison impossible. In total, 6% (n=4) males participated in the quantitative study, with 94% (n=67) being female participants. Adebimpe (2018:104) asserts that newly recruited HCWs could be at higher risk because they are probably starting work, have little information about HIV and PEP and have not been trained on using PEP in preventing HIV among the exposed. This contrasts with what was found in this study, where there were no significant differences when comparing participants with two to five years and those with longer service of 6 years and more. Knowledge about PEP, perceptions and attitudes towards PEP, and compliance with PEP were found to be not linked to any socio-demographical variables.

4.7. INTEGRATION OF QUANTITATIVE AND QUALITATIVE RESULTS

This mixed method study followed a nested or embedded approach, where the qualitative data was sought to augment the outcomes of the study, which is a popular approach within implementation and dissemination research (AHRQ 2013:2). Quantitative and qualitative data were collected concurrently; however, one was a main method to guide the project and the other a secondary database (Santos, Erdmann, Meirelles, Lanzoni, Cunha & Ross 2017:4). Using convergent design and a merging approach to integration, the researcher presented results with a themes-by-statistics display to array themes from the participants' experience of and perceptions about HIV PEP. The convergent design involves quantitative and qualitative data collection and analysis at similar times, followed by an integrated analysis (Guetterman & Cresswell 2015:555). The researcher also applied the integrated results of the theoretical model underpinning this study. As adopted in Santos et al. (2017:6), a summary of the methodological comparison of the mixed method approach in this study is illustrated in Table 4.3.

- **Comparing methodological approaches for Quantitative and Qualitative designs**

This mixed method study was based on the concurrent, nested approach, wherein the primary study was quantitative, and the qualitative part was used to support the findings of the quantitative results. Data was collected from midwifery and OHS practitioners from the three selected sites using questionnaires and semi-structured interviews.

Table 4.3. A summary of methodological aspects of the study (adopted from Santos et al. 2017)

STUDY DESIGN	**Mixed methods research with concurrent nested approach**	
	QUANTITATIVE	**QUALITATIVE**
	Cross sectional survey	**Pragmatism inquiry with positivist and interpretivist positions**
Specific objective/s	• To assess the attitudes, knowledge, and perceptions of midwifery practitioners regarding PEP guidelines.	• To determine the utilisation and uptake of HIV PEP from occupational health and safety practitioners in the hospitals. • To explore the experiences of midwifery practitioners and occupational health and safety practitioners on compliance regarding the PEP guidelines.
Participants	71 midwifery practitioners.	• 13 midwifery practitioners • 2 occupational health & safety practitioners
Data collection	Questionnaires	Semi-structured interviews
Data analysis	Descriptive statistics	Deductive and inductive thematic analysis

- **Comparison between Qualitative and Quantitative data findings**

Following the demonstration of the methodological approach to this mixed method study in Table 4.3, the researcher displayed the quantitative and qualitative data analysis results in Table 4.4. Findings were categorised through comparison. The aspects of interest were from the sectional headings covered in the questionnaires and themes

derived from qualitative data analysis. To begin with, the knowledge about PEP seems to be satisfactory. The gap identified was training which only an overall 63% of participants reported having not received any training on PEP guidelines. The training deficit among participants could be a contributory factor in the undesirable implementation of guidelines and attitudes towards PEP.

Table 4.4. Comparison of findings between qualitative and quantitative data

Quantitative findings	**Qualitative findings**
Knowledge about PEP	**Knowledge about PEP**
- While all participants have heard about PEP, 72% did not know if the PEP guidelines were available in the unit. - An average of 70% agree that PEP is effective in preventing HIV.	A question asked about the immediate action an exposed individual takes post exposure set the participants giving a clear narrative about the guidelines. Although there is an understanding of what needs to be done, non-compliance remains a challenge. *TP_7 '… incidences happen in the labour unit, for example not so long ago I was suturing the woman's perineum and realised that there was blood inside the glove. I doffed the gloves, washed my hands and didn't notice any cut on my hands and continued with my work, I did not see the need to report.'*
Reporting of incidents - Reporting of accidental exposure is suboptimal -51% reported while 21% did not. - Procedure for reporting is known by the majority (86%). - Affected individuals perform first aid immediately after the incident (86%). Although Completion of the PEP course is reported by over half of those who initiated therapy, it is still deemed insufficient, owing to 9% that indicated noncompletion.	**Midwifery practitioners reluctant to report** *OHS_T 'you know the midwives don't like to report, I was also a midwife before working here…'* **First aid procedure** First aid is commonly performed by those who sustain needle prick injuries before reporting to casualty while some may not even report post first aid performance. *MP_7 'I have never been exposed to a needle prick but if a colleague gets an accidental prick, we advise them to just wash it under running water quickly before going to report at casualty. Some do not even go to report after that.'*
Maternity is high risk environment 92% perceive maternity as high-risk unit	**Maternity is a high-risk environment** *TP_6 '…the most common exposures in labour ward is through needle pricks during suturing.'* **Support**

generally, most participants experience a direct occupational exposure in line of duty (70%). Conclusion: there is inherent risk for BBFs in maternity units. **Significant Training gap** 32% were trained. 63% were not trained. Conclusion: optimum training in recent years declined, as seen in the order of years of experience and longer serving cadres who agreed to have received training. **Support** Generally, over half (51%) of participants report availability support.	*TP_5 '…when I was taking my PEP, I suffered side effects, the worst was insomnia and my colleagues advised me to change the times for taking the meds and it got better.'*

- **Attitudes and perceptions about PEP**

Attitudes and perceptions about PEP were compared between the findings of qualitative and quantitative data. The findings reflected an impression of positive attitudes and perceptions about PEP. Although there are disparities noted in the reporting of occupational exposure by this cohort of midwifery practitioners from quantitative data and what was discovered during the semi-structured interviews, the participant's behavioural intention is to report and follow PEP guidelines.

The interviews yielded new information about the process of counselling, which the participants experienced as suboptimal. It is, however appreciated that the teams in the unit are supportive of one another during the experience of occupational exposure to BBFs. This indicates the important role community plays in the work environment. Hence it also noted the influence the team has on each other as the first line of support system. The participants perceive the PEP guideline as easy to use, which confirms that there is absolutely nothing wrong with the guidelines, but perhaps the system or environment in

which they are to be implemented. Below is Table 4.5, which summarises both quantitative and qualitative findings under attitudes and perceptions about PEP.

Table 4.5. Comparison of attitudes and perceptions for qualitative and quantitative findings

Quantitative	**Qualitative**
Attitudes and perceptions about PEP	**Perceptions about PEP**
- Majority agree to reporting the accidental exposures to BBF's (99%) and will use PEP if indicated. - A larger proportion (99%) agree that PEP should be started as soon as possible (99%). - On average the use of PPE is perceived effective in protecting exposure to HIV. - (99%) of participants advocate that PEP guidelines should be followed even after first aid is performed.	**Motivation to report the incidence** The motivation to report is influenced by the system and also the intrinsic sense of responsibility. *KP_4 'I think everyone should just be covered with PEP even if both the patient and the midwife tested HIV negative at the time of the incident. What if one of them is on window period?'* **Appreciation for community support** Midwifery practitioners support each other and are the first line of support for each other during the ordeal. *TP_5 '…when I was taking my PEP, I suffered side effects, the worst was insomnia my colleagues advised me to change the times for taking the meds, and it got better.'* **Perceived ease of use** Guidelines are clear and concise, but participants criticised the process of reporting as being unnecessarily long. *TP_1'…having to wait at casualty for the blood results while panicking! I wish they could just do a rapid test, give PEP and leave. I hate waiting.'* **Perceived usefulness** Guidelines guide participants on steps to follow post exposure to BBFs. *MP_6 'It is very important to report and start with PEP immediately after the procedure, and also make sure you finish the course despite the side effects experienced.'*

- **Compliance with PEP**

The actual compliance with PEP guidelines among participants is poor since it is evident that occupational exposures are experienced by many. Still, only a few reported the incidents even though the procedure for reporting is communicated to personnel. There

is also a gap between those who experience occupational exposure to BBFs and those who finish the course of PEP therapy. PEP prevents HIV infections since it can be used even in high-risk situations. This study derived more information about the OHS practitioners' role in implementing PEP guidelines, which explained that the primary contact and reporting is with the accident and emergency unit, which offers 24-hour service. The OHS's role is to make follow up calls to affected individuals and assist in completing IOD forms. Table 4.6 provides a summary of the findings in relation to compliance with PEP guidelines.

Table 4.6. Comparison of compliance with PEP guidelines

Quantitative	**Qualitative**
Compliance with PEP guidelines	**Compliance with PEP guidelines**
- Most participants agree to report and follow guidelines in case of exposure to BFFs. - Completion of the PEP course is accounted by 66% of 74% of those who start treatment. - Follow up of HIV test is perceived as important (95% agree).	**Behavioural intention** Participants had a positive compliance intention. *KP_4 'I am fortunate that so far I have never had any needle prick injury… I would also report and take PEP. It is important to comply.'* **Actual compliance** Participants know that they must follow guidelines, but they underreport, and some don't complete the course. *TP_2 'It is very important that one completes the course despite the side effects of the ARV's', to fully prevent HIV infection.* *KP_6 '…even though taking PEP is not nice, a full course has to be completed for the sake of one's health.'* **Role of OHS in the implementation of PEP guidelines** OHS practitioners are involved in many other activities hence the reporting of IOD is channelled to accident and emergency units but still monitors compliance with guidelines. Their responsibility is also to follow up on affected individuals for follow up. *OHS_T 'I also monitor that the protocol for the management of exposure to blood and body fluids is complied with. Once a member of staff is pricked by a needle, the protocol instructs that tests be done for HBV and HIV at the same time.'* *OHS_M 'after identifying personnel who reported to casualty after injury, I make follow up and remind them to come back to report any side effects and do follow up tests.'*

4.8. OVERVIEW OF RESEARCH FINDINGS

The findings from qualitative data corroborated and triangulated the quantitative data results. All participants had the experience of above two years working in the maternity units, mostly female, with a larger proportion working in the labour ward. The findings of this study on this cohort of participants were not based on the variables such as age, marital status, gender, level of professional status and years of experience since they did not yield any significant results. The quantitative results were generally based on participants as midwifery practitioners fitting the criteria as determined. The findings from the qualitative phase were based on and derived from the participants' accounts of narratives about the subject matter through the categorisation of themes. The participants are equally at high risk of occupational exposure to BBF, and their behavioural attitudes, perception and knowledge of PEP determine their compliance with PEP guidelines.

4.9. CONCLUSION

In this chapter, due to the nature of the concurrent mixed method study, both quantitative and qualitative findings were presented in this one chapter.

Quantitative data were collected through self-administered questionnaires, while qualitative data was collected via semi-structured interviews, predominantly telephonically. Quantitative findings were based on sociodemographic data, knowledge about PEP, attitudes towards PEP and compliance with PEP. The analysis was mainly presented diagrammatically and descriptively through tables and charts. At the same time, qualitative findings were presented also based on the demographic information of participants and themes derived inductively and deductively from raw data. The findings were based on themes which were supported by the participants' raw account of information through excerpts extracted from verbatim quotes. It was based on these themes that understanding was developed on the trends of exposures to BBFs in the maternity units, the reporting behaviour, the training gap and the actual compliance with PEP guidelines. The next chapter will discuss the integration of findings into the framework and the development of strategies to improve compliance with post exposure prophylaxis guidelines among midwifery practitioners.

CHAPTER 5

INTEGRATION OF FINDINGS AND DEVELOPMENT OF STRATEGIES

5.1. INTRODUCTION

The previous chapter comprehensively reported on the findings of the mixed method study conducted in three public hospitals of the Tshwane district of the Gauteng province of SA. A statistical and descriptive narrative account of data provided through quantitative and qualitative interaction with participants was expressed. Qualitative and quantitative findings were also integrated and analysed in the previous chapter to derive a single report of the study. This chapter focuses on integrating findings into the model and developing strategies to improve compliance with post exposure prophylaxis guidelines among midwifery practitioners. With these integrated findings, a base for developing strategies to improve adherence to post exposure prophylaxis guidelines for midwifery practitioners in the Gauteng province of SA is realised.

Accordingly, the integrated results are presented in application to the CAM which underpinned the data analysis in this study. This model supported the objectives and research questions which motivated and directed the conduction of this mixed method study. The representation of the model in Figure 5.1 illustrates the concepts of the results as encompassed in themes. For this study, two concepts were added to the model (i) knowledge of PEP and (ii) the roles of OHS in the implementation of PEP guidelines. The main reason to add the concepts to the model was considering the view that they formed a significant part of the analysis from which the findings led to the development of the strategies.

5.2. THE HIV PEP GUIDELINES

The PEP guidelines were a tool of focus for this mixed method study. The findings of this study will be discussed based on what was captured as evidence of the level of knowledge, attitudes, perceptions, and actual compliance among the midwifery practitioners with corroboration of data from the OHS practitioners. The WHO cautions that, as with any prevention intervention, the effectiveness of PEP depends critically on high levels of adherence and completion of the prescribed course plus other factors that

may influence PEP effectiveness which include the timing of initiation, level of risk of exposure, and possible drug resistance (DoH 2020:viii).

The integrated findings are discussed below in relation to the CAM concepts.

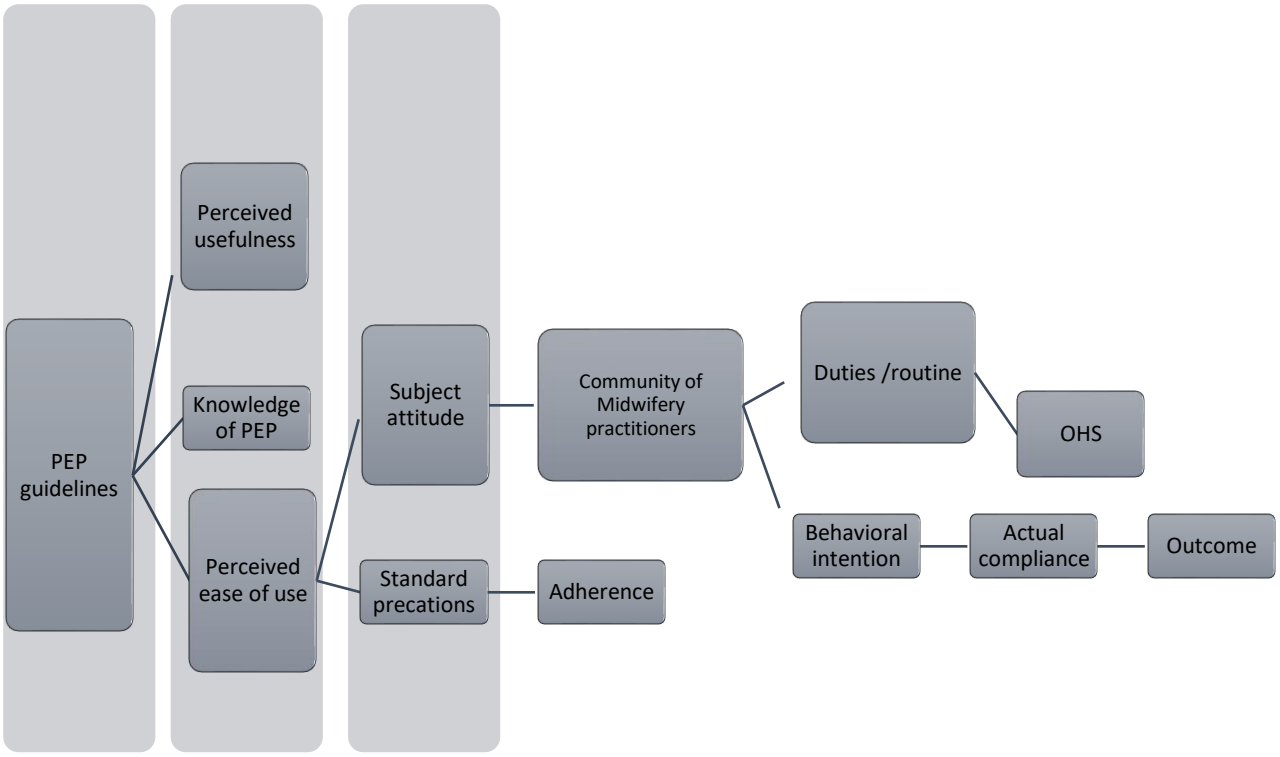

Figure 5.1. Compliance Assessment Model (CAM)

5.2.1. Midwifery practitioners' knowledge and awareness of PEP

Midwifery practitioners, as a category of nurses, face a significant challenge due to occupational HIV exposure, as they provide baseline care to diverse, unique individuals who are HIV-positive, HIV-negative, and with unknown HIV status (Makhado & Seakane 2020:8). Awareness of PEP does not guarantee that the individual fully understands PEP. Knowledge of the subjects is determined by the application and thorough implementation of the procedures when confronted with the unfortunate circumstance of exposure to BBFs. Poor information concerning PEP suggests that there will be excessive possibilities of poor adherence as well as seroconversion of HIV (Makhado & Seakane 2020:10). The midwifery practitioners were aware of the effectiveness of PEP post exposure to BBFs and agreed that PEP has the potential to prolong life. This is congruent with the study in

Gondor, Ethiopia, where 98.5% of participants agree on the importance of PEP for HIV, and 78.5% believe it can reduce the probability of being infected (Mmeremikwu et al. 2020:37).

5.2.2. Perceived usefulness and ease of use of PEP guidelines

This study revealed that a greater proportion of participants perceive PEP as a useful and effective measure to prevent HIV post incidental exposure to human blood and body fluids. The HIV PEP guidelines are viewed as a tool through which the implementation process is guided. PEP was designed to prevent the seroconversion of HIV post exposure to blood and human body fluids of HIV positive individuals. Some participants were not pleased with the process of guidelines implementation stating that the waiting time was too long at the casualty department which was perceived as a barrier to reporting and follow up.

5.2.3. Adherence to SPs during routine midwifery practice

Standard precautions are sets of measures formulated to prevent/protect against transmission of pathogens when providing services within the healthcare sector include components and are not limited to injection safety, use of personal protective equipment and waste management (Maitanmi et al. 2021:15). This study did not seek to assess whether the participants practised the standard precautions but assessed their attitudes towards the use of PPE as part of the implementation of standard precautions. Generally, the midwifery practitioners had a positive attitude towards the use of PPE. The details of whether safe needle practice and disposal were adhered to are not known. Midwives and nurses are expected to use the standard precautions as the basic infection control precautions when delivering care to all patients, regardless of their presumed infection status (Fashafsheh, Ayed, Koni, Hussein & Thultheen 2016:294).

5.2.4. Midwifery practitioners' attitudes towards PEP guidelines

Post exposure prophylaxis (PEP) is a component of post exposure management when accidental transmission of HIV occurs to HCWs, whereby the patient must undergo serological screening (Mulatu & Hussen 2019:1). In this study, not all the midwifery practitioners that were directly exposed to BBFs reported the exposures. Similarly, in the

study among primary healthcare workers, an estimated 82% of total exposures were not reported in the Johannesburg health district of SA (Mbah, Elabor & Omole 2020:3). Underreporting of accidental exposures creates a blurry area of reality about these sorts of injuries in the line of duty for healthcare professionals. Furthermore, this explains the underutilisation of PEP services in healthcare settings. Even though the participants in this study demonstrated a positive attitude towards PEP, there is still a reasonable margin of low reporting and compliance.

5.2.5. Midwifery practitioners' behavioural intention versus actual compliance with PEP

The participants have expressed a positive behavioural intention of following the PEP guidelines, which does not tally with the actual compliance. There is an understanding of the importance and benefits of adherence to the guidelines, but barriers are encountered by some midwifery practitioners. Although most participants have a positive compliance intention to PEP, the actual compliance when faced with direct exposure to BBFs remains questionable. An approximate utilisation of PEP among the participants in this study was 74%. Despite the substantial utilisation of PEP in this study, it still alerts that the reporting and practice of PEP for HIV need improvement.

5.2.6. The role of OHS practitioners in the implementation of PEP guidelines

The Southern African Development Community Region (SADC) currently faces varying challenges in OHS service provision, including but not limited to OHS human resource capital deficits and lack of comprehensive national OHS systems (Moyo, Zungu, Erick, Tumoyagae, Mwansa, Muteti, Makhothi & Maribe 2017:591). The study found that one officer ran occupational health and safety services in each selected hospital. The predictable high number of incidences in clinical settings could create a significant gap in managing and following up incidences.

According to Moyo et al. (2017:591), occupational health seems to have been neglected in most countries and has not received attention like other public health initiatives such as HIV/AIDS and tuberculosis (TB) programmes. Among other competencies of the OHS practitioner is the identification of the need for an employee awareness programme (EAP) for the following health related issues: HIV, STI, alcoholism, substance abuse, chronic

diseases, psychosocial conditions, shift work, vulnerable groups such as HCWs, violence and executive health management (SANC 2013:7). The OHS practitioners in the study facilitate the reporting of occupational related incidences in accordance with the COIDA. The role of OHS practitioners in implementing PEP guidelines is explicitly not clearly defined in this study.

5.2.7. Compliance with HIV PEP

The midwifery practitioners reported that there is quite a high frequency of exposure to BBFs in the maternity units. They expressed that they had not reported the incidents for various reasons. One of the reasons, as expressed by some participants, was that they preferred to use their private doctors for PEP services. This is aligned with the study by Peu and Rasweswe (2020:4) which revealed that some of the nurses preferred to seek HIV PEP from other facilities for confidentiality reasons.

Compliance with the PEP guidelines using a different site or PEP service other than the individual's place of work is still compliance and an individual's right. Still, the problem becomes the gaps in records. In this study, of the 74% of participants who started on the PEP regimen from their place of work, at least 66% managed to complete the course. This finding is high as compared to what was obtained in the study in South-Eastern Nigeria where 40% did not complete the course (Mmeremikwu et al. 2020:37). However, a remarkable 100% complete adherence for four (4) weeks was recorded among those placed on HIV PEP in the other tertiary hospital in Nigeria (Mmeremikwu et al. 2020:38). This is evident that full compliance can be possible if all barriers are confronted and cleared.

Managing the health of women living with HIV and preventing mother-to-child transmission of HIV remains a critical intervention for ensuring that women and children survive and thrive (DoH 2019: v2.3). Based on the woman's medical history, including the woman's HIV status at their disposal, the midwifery practitioners may also decide on whether to report and subsequently use the PEP services or not. The current HIV negative status of the patient and the midwifery practitioner may not always be an accurate reflection, considering the window period from infection time. Evidence suggests that 4% of women in SA who were initially HIV-negative become HIV positive later in pregnancy

hence regular repeat testing is essential (DoH 2015:22). The window period for an HIV test refers to the time between HIV exposure and when a test can detect HIV in the person's body. Some participants expressed fear of the HIV window period and suggested that PEP should be indicated for all blood and body fluids exposures to leave no room for safety risk.

In this study, perhaps a clearer picture of how many exposed midwifery practitioners get enrolled, how many completed the treatment, and how many took a follow up test to establish if seroconversion occurred or not, would be painted.

5.3. STRATEGIES TO IMPROVE COMPLIANCE WITH POST EXPOSURE PROPHYLAXIS GUIDELINES AMONG MIDWIFERY PRACTITIONERS

This mixed method study has revealed gaps in the implementation of the PEP guidelines among midwifery practitioners. These gaps are comparable to the findings of other studies of similar objectives conducted amongst HCWs. Non-compliance to clinical guidelines such as the HIV PEP is a serious challenge. Therefore, strategies must be developed and implemented to curb this surge of non-compliance to improve the livelihood of healthcare professionals at their workplace. Three main strategies, as validated by experts in the fields of Quality, IPC, OHS and HIV management, are outlined and discussed below:

Strategy 1*: Strengthening knowledge about HIV PEP guidelines and Standard precautions through Continuous Training*

Maternity units are inherently high-risk clinical areas due to the inevitable exposures to human blood and body fluids. The study revealed that, even though the uptake of PEP is still not observed to be at an optimal level, the midwifery practitioners in the study sites' level of knowledge about PEP was higher but did not tally with the level of practice and utilisation of PEP services despite the information they have about PEP. Moralejo, El Dib, Prata, Barretti and Corrêa (2018:9) suggest that audit and feedback might increase awareness of specific individual behaviours and their consequences, provide motivation for change as appropriate, and reminders and checklists can prompt HCWs to perform required actions in the proper time.

- As part of the strategy for improvement, orientation and induction packages must cover the implementation of PEP guidelines, including but not limited to adherence to Standard Precautions and reporting of incidents of occupational exposure to BBFs. The training could be continuous as in-service by trained occupational health and safety practitioners and IPC committee members.

Despite organisations' widespread adoption of SPs, gaps in their implementation by HCWs have been noted (Moralejo et al. 2018:8). Hence, it is suggested that maternity staff be engaged regularly through in-service training on standard precautions and management of occupational exposure to BBFs.

Strategy 2: *Capacity building and expansion of OHS services in the workplace*

Each study setting had one dedicated OHS practitioner who oversees all occupational health and safety hazards in the hospital. The role of occupational health and safety practitioners in implementing PEP is not clearly defined, except that they assist the exposed individuals in completing the IOD forms when reporting. The OHS practitioner has multiple functions and participates in multidisciplinary structures of the organisation and is clearly not the primary contact post exposure to biological hazards such as BBFs.

Given the other responsibilities faced by these practitioners, it is necessary to beef up capacity either through recruitment or training of more nurses to carry out some of the duties OHS practitioners should do, such as counselling and follow-up of individuals exposed to BBFs and therapy. Therefore, it is imperative to develop other mechanisms to increase OHS capacity, including allocating resources for training practitioners (Masekameni, Moyo, Khoza & Chamdimba 2020:2).

Although the OHS practitioners that participated in this study had a qualification in OHS, it was found in the study conducted on accessing OHS in the SADC for the entire region, where the literature suggests that only one country out of the 16 countries has a formal occupational health training programme with the number of competent practitioners available to render occupational health services remain low (Masekameni et al. 2020:9).

- OHS committee members, which are part of the staff in the units, must be capacitated through regular training on the management of occupational

incidences, including exposures to BBFs and implementation of the PEP guidelines.

- Clarification of roles and responsibilities for the members of the OHS committee should include a description and outline of terms of reference with particular reference to 'on-call duties'. This should include counselling and drawing of blood for HIV tests, in line with their scope of practice.

Strategy 3: ***Create specialised and individualised care using mHealth technology for expediting the reporting and management of personnel exposed to BBFs***

The WHO Global Observatory for eHealth defines mHealth as medical and public health practice supported by mobile devices (Rowland, Fitzgerald, Holme, Powell & McGregor 2020:1). A key objective of implementing digital health, and in particular mHealth, is to increase access to health services through the effective and timely sharing of health data (WHO, 2018:3). This service is not new in SA and other developing countries. SA has implemented mHealth with the introduction of mom-connect and nurse-connect which has since seen widespread utilisation. In addition, an increasing proportion of the population is accessing health information and services through mobile telephones. A vast array of mobile-based solutions from SMS to complex "smartphone" applications – have been developed to improve health access, knowledge, and behaviours across a range of contexts and target groups (WHO 2018:2). Additionally, mHealth apps can be of educational value to patients by providing structured disease and treatment-related education that is easily accessible to the user (Rowland et al. 2020:2).

This mechanism may also be used at hospitals among staff working in a high-risk environment such as maternity units. Rowland et al. (2020:1) suggest that one of the scopes of the functionality of the mHealth app is to improve clinical outcomes from established treatment pathways through behaviour change and enhancement of patient adherence and compliance with treatment. In this study, it was discovered that midwifery practitioners might know PEP guidelines, report incidents of exposure to BBFs, and start PEP, but some of them do not complete the course. Common reasons for non-adherence that can be addressed through an app include forgetfulness, lack of understanding of side effects and perceptions of lack of efficacy (Rowland et al. 2020:4). Hence the strategy for

using mHealth might be beneficial as one of its functionalities addresses the improvement to compliance. The mHealth app should be a link to strategic team members allocated to act upon an incident alert.

- A trained team of OHS should be allocated for all high-risk units in the hospital.
- The reporting process will not require an exposed individual to wait at the casualty for help.
- After an incident is logged in or reported digitally, all team members receive an alert which will prompt an available team member close to the unit to go to the unit and assist with counselling and drawing blood to test for HIV.
- Provision of PEP will be made the same way, that is, pharmacy staff may deliver PEP medication in the unit before the end of the shift.
- The exposed individual may also be given the option to choose on the APP where to collect PEP within 72 hours and follow up for those still concerned about confidentiality. The OHS nurse must be updated after collecting PEP for statistics, monitoring, and evaluation purposes.

5.4. CONCLUSION

This chapter focused mainly on the integrated results of the mixed method study in relation to the Compliance Assessment Model underpinning this study and further demonstrated the development of strategies using the findings. The next chapter will present the recommendations and conclusion of the study.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1. INTRODUCTION

The preceding chapter presented the study findings in alignment with the Compliance Assessment Model (CAM). Moreover, strategies to improve compliance with PEP among midwifery practitioners were also developed in line with the findings. This chapter concludes the study with a synopsis of the findings, a description of the limitations of the study and finally, the recommendations.

6.2. SYNOPSIS OF THE STUDY FINDINGS AND OBJECTIVES

This mixed method study was conducted among midwifery and occupational health and safety practitioners working in three public hospitals. A nested approach was used in data collection. The primary data collection method was questionnaires among the midwifery practitioners working in the maternity units of the selected sites. Qualitative data collection was conducted through semi-structured interviews among some of the midwifery practitioners and the OHS practitioners to corroborate the quantitative method's findings. This research study met the objectives, which were to:

• *Determine the utilisation and uptake of HIV PEP among midwifery practitioners in the hospitals.*

• *Explore the experiences of midwifery practitioners and occupational health and safety practitioners on compliance regarding the PEP guidelines.*

• *Assess the knowledge, attitudes, and perceptions of midwifery practitioners regarding PEP guidelines.*

• *Develop strategies to improve compliance with post exposure prophylaxis guidelines among midwifery practitioners.*

The study found that maternity units are indeed high-risk clinical areas, as expressed by midwifery practitioners in relation to the frequency and prevalence of occupational exposures to blood and body fluids inherent in the clinical practice of midwifery. It was

also found that there were no significant associations between occupational exposure to HIV and sociodemographic characteristics. Despite the general prevalence, there is still a challenge in reporting and compliance with the PEP regimen for those who ultimately choose to follow through with the procedures. It was further noted that the midwifery practitioners rely on one another for support regarding the uptake of PEP. The side effects reported to have been experienced by the directly exposed individuals were managed by their private doctors as the midwifery practitioners were discouraged from waiting at the emergency department, which was said to take too long to be attended to by the medical officers there. This was the main barrier to seeking services at the same place of employment.

Although it was not mentioned outright that there was a fear of compromised confidentiality, it could be suspected that there is also a fear of testing positive at the hospital, and the colleagues will also find out. This study revealed a gap in training on the implementation of PEP guidelines, even though awareness about PEP was reasonable. Providing relevant information on HIV PEP for healthcare professionals would help to identify unsafe practices, prevent the transmission of HIV, and increase staff retention and productivity (Esum, Nwana, Ngwayu, Lum, & Akoachere 2022:2).

6.3. CONTRIBUTION OF THE STUDY

The study will inform the policymakers, the hospital management, and the national department of health about the midwifery practitioner's level of knowledge about PEP and their compliance with the prescribed clinical guidelines. The developed strategies based on the study findings, will guide the persons in authority and serve as a base for implementation according to their own clinical settings. Implementing the strategy will create a different approach as part of it involves a more technological intervention aligned to the current landscape of technology, where mobile technology has become a norm.

6.4. LIMITATIONS OF THE STUDY

This study was conducted among midwifery practitioners based in only three hospitals in the same district in the Gauteng province. Therefore, the findings may not represent all midwifery practitioners in the country. However, the findings painted a clearer picture of

the PEP knowledge and the behaviour among midwifery practitioners which is likely to be the same in other settings as supported by many studies conducted among HCWs. Another limitation is that the intention was to have the participation of three OHS practitioners representing each study site. Still, only two were able to participate, which means that only two hospitals were represented. The study could not determine whether those who enrolled to use the PEP and completed the course were seroconverted or not. This could have provided more insight into the effectiveness of PEP when taken as prescribed.

6.5. RECOMMENDATIONS

Several studies conducted amongst nurses and midwifery practitioners globally yielded almost similar results to this study. The challenge of underreporting incidents of exposure to BBFs, underutilisation of PEP services, and lack of training about PEP guidelines poses a threat to the quality of health for the front liners which are also the backbone of the health system. Providing PEP alone to these exposed people is not sufficient due to initiation time, type of recommended regimen, completeness and follow-up are determinant factors and crucial for PEP effectiveness (Temesgen, Weldu, Getahun & Aragaw 2020:69). The researcher therefore recommends the following:

- ***Policy makers***
  - The DoH should prioritise the implementation of critical programmes related to safeguarding the wellbeing of clinical cadres, including the mandatory training package about the PEP guidelines and all other essential guidelines.
  - Application of strategies and other models of compliance to inform policies and protocols for the management and mitigation of safety risks at the clinical workplace be made.
- ***Nursing Education***
  - Training on occupational exposures, standard precautions and PEP guidelines be incorporated in the mainstream nursing and midwifery curriculum.

- ***Clinical practice***
  - Collaborative structures be created to perform periodic audits to ensure that training is conducted on standard precautions and using PEP guidelines. The structure should include but not be limited to OHS, IPC and quality HIV management.
  - Stringent measures for infection prevention and control principles should be applied and monitored continuously.
- ***Clinical follow-up***
  - The hospitals to follow up and monitor adherence and the HIV status of any victim by creating awareness for PEP users. There is a demand for PEP regimens that could overcome challenges of poor compliance, severe adverse events, and dosing convenience (Nie, Sun, He, Liu, Wang, Li, Gu, Chen, Li, & Chen 2021:2612).
- ***Further research***
  - A further prospective cohort study should be conducted in other provinces of South Africa to derive a generalisation of common findings.
  - Research should be conducted to evaluate the effectiveness and tolerability of Antiretroviral drugs since the introduction of Dolutegravir to the PEP regimen.

6.6. CONCLUSION

Strategies to improve compliance with PEP among midwifery practitioners were developed as a derivative of informed findings and expert insight. The prevalence of accidental exposures to blood and body fluids in maternity units is high and requires effective management through proper interventions. There is a need for interventions to reduce the burden of health care related infections and to set up effective surveillance programmes to determine their impact (Bekele, Yimam & Akele 2018:1). Training remains the most effective method to inculcate the culture of learning and practice. The PEP guidelines are widely available, and midwifery practitioners are aware of the content of the guidelines, but there is still evidence of non-compliance. Underutilisation of the PEP services indicates either a gap in knowledge, lack of trust in the effectiveness of PEP, self-testing or even negligence on the side of the midwifery practitioners.

HIV pandemic remains a global public health concern with most pregnant women testing positive for HIV. Therefore, monitoring and following up on victims of accidental exposure

to blood and body fluids should be prioritised and strengthened. Peer support, as appreciated by the midwifery practitioners in the study, is still insufficient, but a more holistic approach to support by the employer might make a difference. Protecting healthcare workers requires the institutionalisation of occupational health risk assessment and risk-based medical surveillance (Mossburg, Agore, Nkimbeng & Commodore-Mensah 2019:10).

Long waiting times prior to receiving help discourage newly exposed midwifery practitioners in that they either seek help elsewhere or perhaps do not even follow through with the process as per guidelines. The provision of PEP services needs to be reviewed to achieve universal coverage for healthcare workers at risk of HIV infection through accidental exposures to blood and body fluids.

The high level of occupational exposure to HIV and relatively low level of PEP use among midwifery practitioners indicates the need for prioritisation of training and active intervention through monitoring and follow up of those who report and commence PEP therapy.

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ANNEXURES

ANNEXURE A: ETHICAL CLEARANCE CERTIFICATE

UNISA university of south africa

COLLEGE OF HUMAN SCIENCES RESEARCH ETHICS REVIEW COMMITTEE

24 August 2021

Dear Mosehle Salome Matlala

Decision:
Ethics Approval from 24 August 2021 to 24 August 2026

NHREC Registration # :
Rec-240816-052
CREC Reference # :
40667235_CREC_CHS_2021

Researcher(s): **Name: Mosehle Salome Matlala**
Contact details: 40667235@mylife.unisa.ac.za
Supervisor(s): **Name: Prof TG Lumadi**
Contact details: lumadtg@unisa.ac.za

Title: Strategies to improve compliance to Post Exposure Prophylaxis guidelines for midwifery practitioners in Gauteng Province, South Africa.

Degree Purpose: PhD

Thank you for the application for research ethics clearance by the Unisa College of Human Science Ethics Committee. Ethics approval is granted for five years.

The ***low risk application*** *was reviewed by* College of Human Sciences Research Ethics Committee, in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.

The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the College Ethics Review Committee.
3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the

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ANNEXURE B: TDH PERMISSION

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

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TSHWANE RESEARCH COMMITTEE: CLEARANCE CERTIFICATE

DATE ISSUED: 29/03/2022
PROJECT NUMBER: 68/2021
NHRD REFERENCE NUMBER: GP_202109_048

TOPIC: Strategies to improve compliance to Post Exposure Prophylaxis guidelines for midwifery practitioners in Gauteng Province, South Africa

Name of the Lead Researcher:	Mrs Mosehle Salome Matlala
Name of the Supervisor:	Prof TG Lumadi
Facilities:	Tshwane District Hospital
Name of the Department:	UNISA

NB: THIS OFFICE REQUEST A FULL REPORT ON THE OUTCOME OF THE RESEARCH DONE AND

NOTE THAT RESUBMISSION OF THE PROTOCOL BY RESEARCHER(S) IS REQUIRED IF THERE IS DEPARTURE FROM THE PROTOCOL PROCEDURES AS APPROVED BY THE COMMITTEE.

DECISION OF THE COMMITTEE: **APPROVED**

Dr. Mpho Moshime-Shabangu
Deputy Chairperson: Tshwane Research Committee
Date: 29-03-2022

Mr. Mothomone Pitsi
Chief Director: Tshwane District Health
Date: 2022.03.30

ANNEXURE C: MRH PERMISSION

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Enquiries: Dr. Manei Letebele-Hartell
Tel: +27 12 451 9038
E-mail: Troy.Mashabela@gauteng.gov.za

TSHWANE RESEARCH COMMITTEE: CLEARANCE CERTIFICATE

DATE ISSUED: 25/10/2021
PROJECT NUMBER: 68/2021
NHRD REFERENCE NUMBER: GP_202109_048

TOPIC: Strategies to improve compliance to Post Exposure Prophylaxis guidelines for midwifery practitioners in Gauteng Province, South Africa

Name of the Lead Researcher:	Mrs Mosehle Salome Matlala
Name of the Supervisor:	Prof TG Lumadi
Facilities:	Mamelodi Hospital
Name of the Department:	UNISA

NB: THIS OFFICE REQUEST A FULL REPORT ON THE OUTCOME OF THE RESEARCH DONE AND

NOTE THAT RESUBMISSION OF THE PROTOCOL BY RESEARCHER(S) IS REQUIRED IF THERE IS DEPARTURE FROM THE PROTOCOL PROCEDURES AS APPROVED BY THE COMMITTEE.

DECISION OF THE COMMITTEE: **APPROVED**

.....
Dr. Manei Letebele-Hartell
Chairperson: Tshwane Research Committee

Date 25/10/2021

.....
Mr. Mothomohe Pitsi
Chief Director: Tshwane District Health

Date: 2021.10.25

ANNEXURE D: KPTH PERMISSION

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

KALAFONG HOSPITAL
PRIVATE BAG X396
PRETORIA
0001

ENQUIRIES : **MS PM MONYEPAO**
TEL : **012 318 6995**
EMAIL : **Patricia.Monyepao@gauteng.gov.za**
REF : **KPTH /MARCH 2022**

TO: Ms DS Matlala

RE: PERMISSION TO CONDUCT RESEARCH

TITLE: STRATEGIES TO IMPROVE COMPLIANCE TO POST EXPOSURE PROPHYLAXIS GUIDELINES FOR MIDWIFERY PRACTITIONERS IN GAUTENG PROVINCE, SOUTH AFRICA23

Permission is hereby granted for the research to be conducted at **Kalafong Provincial Tertiary Hospital**. Please note that full approval will be granted on receipt of Ethics approval as well as the registration number from the NHRD.

This approval is given in accordance to the "Promotion of Access to Information Act. No 2 of 2000" and it is expected of each investigator to ensure that all patient personal information will be managed and kept safe in agreement to the act.

Please note that in addition to receiving approval from the hospital research committee, you are still required to arrange the logistics with the relevant departments. You are obliged to inform this committee in writing of any amendments made to this protocol. Importantly, you require full approval (not conditional approval) before data collection can commence.

Informed consent for participation of research subjects and collection of data remains the responsibility of the researcher.

The hospital reserves the right to revoke this consent to do research in the facility if any misconduct with regards to patient participation or inappropriate behaviour on behalf of the researcher comes to light.

You are also required to submit your final report or summary of your findings and recommendations to the office of the Chief Executive Officer.

Kind regards

PROF DG VAN ZYL
CHAIR PERSON: RESEARCH COMMITTE
DATE: 21/4/2022

Ethics approval submitted: **YES** **NO**

Approved

PROF DG VAN ZYL
CHAIRPERSON: RESEARCH COMMITTEE
DATE: 21/4/2022

GAUTENG PROVINCIAL GOVERNMENT
Kalafong Provincial Tertiary Hospital
2022 -04- 21
P/Bag / P/Sak X396 Pretoria 0001
SUPERINTENDENTS OFFICE

ANNEXURE E: REQUEST TO PARTICIPATE IN THE STUDY

Ethics clearance reference number: Rec-240816-052

Research permission reference number: 40667235_CREC_CHS_2021

2022 April 22

Title: Strategies to improve compliance to Post Exposure Prophylaxis guidelines for midwifery practitioners at specific hospitals in Gauteng Province, South Africa

Dear Prospective Participant

My name is Mosehle Matlala, a PhD in Nursing student at the University of South Africa. I am doing research with Professor TG Lumadi of the Health studies department at UNISA. We hereby invite you to participate in a study entitled: *Strategies to improve compliance to Post Exposure Prophylaxis guidelines for midwifery practitioners at specific hospitals in Gauteng Province, South Africa.*

This study is aimed at developing strategies to improve compliance to Post Exposure Prophylaxis guidelines for midwifery practitioners in Gauteng Province, South Africa.

As part of the midwifery team in the maternity unit with constant exposure to blood and body fluids, we seek your participation in shedding the light on how you and other colleagues deal with the unfortunate and sometimes inevitable incidences of direct exposure to body fluids whereafter you are enrolled in the Post exposure prophylaxis (PEP) programme. We believe that sharing your experiences and knowledge on the use of the PEP guideline would benefit the study in the direction towards probability of influencing the redesigning or modification of the current applicable guidelines.

We have identified you as a prospective participant by virtue of being a registered midwife currently practicing midwifery. We do not by any means hold any personal information about you. Our intention is to have a maximum number of registered midwives from three teaching institutions in Gauteng Province which give us a rich representation of the selected cadre.

Your consent to participate means that you are agree to the use of tape/voice recording during the semi-structured interview and completing the questionnaire provided. Anonymity of your shared information will be maintained as there would be no record of your name during the interview or on the questionnaire. The interviews would be conducted to a minimum of 20 minutes, whereas the provided questionnaire which should take at least 15 minutes to complete at your own convenient time will be allowed for later submission as would be agreed between the participant and the researcher.

Participating in this study is voluntary and you are under no obligation to consent to participation. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a written consent form. You are free to withdraw at any time and

without giving a reason. Should you decide to withdraw from participation after you have submitted the questionnaire, it will be difficult to identify your response as coding will be used instead of names, for example, Questionnaire (4), which may not be clear to link it to an individual.

The benefit for participating in this study includes but is not limited to the professional contribution to the policy or guideline design to promote personnel wellness through compliance among those affected by exposure to human body fluids while performing their duties.

This study poses no risk to your health or your profession as it is aimed at finding the solution to noncompliance to the implementation of the current PEP guidelines as prescribed.

Your name will not be recorded anywhere and no one, apart from the researcher and identified members of the research team, will know about your involvement in this research. Your answers will be given a code number, or a pseudonym and you will be referred to in this way in the data. Your answers may be reviewed by people responsible for making sure that research is done properly, including the transcriber, external coder, and members of the Research Ethics Review Committee. Otherwise, records that identify you will be available only to people working on the study. The research findings will be shared on platforms including but not limited to journal articles and conferences, but individual participants will not be identifiable in such platforms.

Hard copies of your answers will be stored by the researcher for a minimum period of five years in a locked cupboard/filing cabinet at the area accessible by the researcher only for future research or academic purposes; electronic information will be stored on a password protected computer. Future use of the stored data will be subject to further Research Ethics Review and approval if applicable. At the lapse of the five years indicated, the hard copies will be shredded, and electronic copies will be permanently deleted from the hard drive of the computer through the use of a relevant software programme

There is no form of payment or compensation to you for consenting to participate in the study.

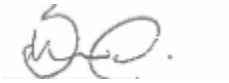
This study has received written approval from the Research Ethics Review Committee of the Unisa. A copy of the approval letter can be obtained from the researcher if you so wish.

If you would like to be informed further on the aspect of the study or the final research findings, please contact me, Mosehle Matlala on 0826607587 or salumatlala@gmail.com

Should you have concerns about the way in which the research has been conducted, you may contact Prof TG Lumadi on lumadtg@unisa.ac.za. Contact the research ethics chairperson of the CREC, Dr KJ Malesa, maleskj@unisa.ac.za, 012 429 6054 if you have any ethical concerns.

Thank you for taking time to read this information sheet. If you are willing to participate in this study, kindly complete the consent form below.

Kind regards



Mosehle Salome Matlala

Researcher

ANNEXURE F: CONSENT TO PARTICIPATE IN THE STUDY

I, _____ , confirm that the person asking my consent to take part in this research has told me about the nature, procedure, potential benefits and anticipated inconvenience of participation.

I have understood the information which had been explained to me regarding the study.

I have had sufficient opportunity to ask questions and am prepared to participate in the study.

I understand that my participation is voluntary and that I am free to withdraw at any time without penalty.

I am aware that the findings of this study will be processed into a research report, journal publications and/or conference proceedings, but that my participation will be kept confidential.

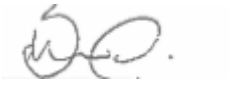
I agree to the recording of the interview

I have received a signed copy of the informed consent agreement.

Participant Name & Surname……...

Participant Signature……..Date……

Researcher's Name & Surname: Mosehle Salome Matlala

Researcher's signature:  Date: 2022/08/23

ANNEXURE G: EXPERT PANEL CONSENT FORM

CONSENT TO PARTICIPATE AS AN EXPERT IN THE VALIDATION OF DEVELOPED STRATEGIES IN THE RESEARCH STUDY

Ethics clearance reference number: **Rec-240816-052**

Research permission reference number: **40667235_CREC_CHS_2021**

Title: Strategies to improve compliance to Post Exposure Prophylaxis guidelines for midwifery practitioners at specific hospitals in Gauteng Province, South Africa

Background of the study

The mixed method study was conducted in three (3) public hospitals in the Tshwane District of Gauteng Province. The sample included the midwifery practitioners who worked at the maternity units of the selected sites at the time of the study. Included also in the study were the occupational health and safety practitioners.

The main approach of the study was quantitative with data collected through questionnaires from the midwifery practitioners. Qualitative data collected through structured interviews, was conducted among OHS practitioners and a few midwifery practitioners to corroborate the findings of the quantitative data (nested approach).

The aim of the study

This study was aimed at developing strategies to improve compliance to Post Exposure Prophylaxis guidelines for midwifery practitioners in Gauteng Province, South Africa.

The role of the expert panel

The developed strategies are aligned to the findings of the study, as conducted in the three hospitals. The summary of the findings will be shared with you to assist in objective review and decision making. As persons of expertise and professional background in the field of either Quality, OHS, IPC and HIV management, your participation in validating the developed strategies will be appreciated. You are requested to review the strategies and advise if they are:

- Relevant and valid to the findings
- Implementable in terms of setting and cost implications

Terms of Participation

Your consent to participate means that you are agree to the mentioning of your name and your contribution to the study should it be required.

Participating in this study is voluntary and you are under no obligation to consent to participation. If you do decide to take part, you are requested to sign the declaration hereunder. You are free to withdraw at any time and without giving a reason.

The benefit for participating in this study includes but is not limited to the professional contribution to the policy or guideline design to promote personnel wellness through compliance among those affected by exposure to human body fluids while performing their duties.

There is no form of payment or compensation to you for consenting to participate in the validation of the strategies for the purpose of the study.

This study has received written approval from the Research Ethics Review Committee of the Unisa as well as Tshwane District Ethics Committee and the Institution's Research Committee. A copy of the approval letters can be obtained from the researcher if you so wish.

If you would like to be informed further on the aspect of the study please contact me, Mosehle Matlala on 0826607587 or salumatlala@gmail.com.

Should you have concerns about the way in which this exercise has been conducted, you may contact Prof TG Lumadi on lumadtg@unisa.ac.za. Contact the research ethics chairperson of the CREC, Dr KJ Malesa, maleskj@unisa.ac.za, 012 429 6054 if you have any ethical concerns.

If you are willing to participate in this study, kindly complete the declaration below.

Declaration by the Expert

I, _____ declare that I voluntarily participate in the review and validation of the strategies as developed by the researcher. My occupational specialty is in the field of IPC/ Quality/ OHS/ HIV Management. My contribution in this study is solely the review and validation. I have understood the information which had been explained to me regarding my role in the study. I have had sufficient opportunity to ask questions and am prepared to participate in the study.

I am aware that the outcome of this study will be processed into a research report, journal publications and/or conference proceedings.

Expert Name & Surname……...

Expert Signature……...Date……

Researcher's Name & Surname: **Mosehle Salome Matlala**

Researcher's signature:  Date: 2023/02/05

ANNEXURE H: QUESTIONNAIRE

Dear Participant

Thank you for your consent to participate in this study. The questionnaire is divided into two sections, and it should take at least 20 minutes to complete. Please do not write your name on the questionnaire. The code furnished at the top of the page is for identification purposes which will assist in the analysis of information collected from you.

Title: Strategies to improve compliance to Post Exposure Prophylaxis guidelines for midwifery practitioners at specific hospitals in Gauteng Province, South Africa

Part 1

Socio-Demographic information	
Age	
Gender	
Marital status	
Religion	
Professional status (e.g. post basic midwifery student, registered midwife)	
Area of allocation e.g. labor ward, ANC, PNC or NICU	
Years of experience as a midwife	

Part 2 - Indicate your answer with a cross (X)

Knowledge about Post Exposure Prophylaxis (PEP)		**Yes**	**No**	**Not sure**
a.	Have you ever heard about PEP?			
b.	Are PEP Guidelines available in your unit?			
c.	Does PEP have a potential to prolong the life of a person?			

d.	Does exposure to human body fluid make your work environment High risk?			
e.	Do you think PEP is effective in preventing HIV?			
f.	Have you ever received training on the implementation of PEP guidelines			
g.	If answered yes to the above, was the training formal on in-service?			
h.	Is the procedure for reporting exposure to blood and body fluids either through splashes, needlestick injuries etc. communicated to all personnel?			
i.	Have you ever been directly exposed to blood and body fluids while performing your midwifery duties?			
j.	If answered yes to the question above, was there any first aid done?			
k.	Was the incident reported to the operational manager and /or occupational safety official?			
l.	Do you think there is sufficient support for those who are exposed and put on PEP program?			
m.	Was prophylaxis provided at the same institution where the exposure occurred?			
n.	How many drugs combination should one take for PEP?			
o.	Was the patient's HIV status determined before provision of prophylaxis regimen?			

p.	Is counselling on risks, benefits, side effects and importance of adherence provided before initiating the PEP regimen			
q.	Did you complete the course of PEP as prescribed?			
r.	Did you experience any side effects?			

Part 3: Indicate your answer with a cross (X)

Attitudes towards PEP		**Agree**	**Disagree**	**Not sure**
s.	In your opinion, do you think PEP reduces likelihood of HIV?			
t.	The use of Personal Protective Equipment (PPE) is the effective measure to prevent the likelihood of HIV infection.			
u.	Support for affected individuals by colleagues would improve compliance.			
v.	PEP should be indicated for any blood and body fluid exposure.			
w.	PEP should be initiated even after first aid measures are performed.			
x.	PEP should be initiated even when the patient exposed to has tested HIV negative			

Part 4. Indicate your answer with a cross (X)

Compliance towards PEP		**Agree**	**Disagree**
y.	I will report and follow guidelines if I am exposed to blood and body fluids		
z.	It is important to complete the course of PEP even when the side effects persist		
aa	PEP guidelines are important for the prevention of HIV in the workplace		

bb	After completion of the regimen, it is important to have a follow up test for HIV to verify that the individual is not infected, and PEP was effective		
cc	Disclosure of any chronic conditions will assist the health professional to monitor the affected individual accordingly to prevent complications		

Thank you for taking your time to complete the questionnaire.

ANNEXURE I: INTERVIEW GUIDE – MIDWIFERY PRACTITIONERS

Title of the study: **Strategies to improve compliance to Post Exposure Prophylaxis guidelines for midwifery practitioners at specific hospitals in Gauteng Province, South Africa**

Part 1: Socio - Demographic information

Age	
Gender	
Professional status (e.g. registered midwife, post basic midwifery student)	
Years of experience in the current position	

Part 2: Interview Questions

Questions	Answers
• What type of occupational exposures are common in the maternity unit where you are working?	
• What measures do you take to mitigate the risks for exposure?	
• Have you ever been exposed to patient's blood and/or body fluids?	
• What is the first thing you do when you realise that you have been exposed to the patient's blood or body fluids?	
• If reported, was counselling provided and what information was included in the counselling?	
• Do you know the first line PEP regimen?	
• How soon should an exposed individual be started on PEP regimen?	
• Under which circumstances is PEP not indicated for an exposed individual?	
• Are side effects monitored and if experienced, how are they managed?	
• According to your experience in the unit, does everyone who start the PEP regimen finish the course as prescribed?	

• If you were ever exposed, did you finish the course of PEP?	
• What do you think are the challenges in implementing the PEP guidelines?	
• In your opinion, what could be done to improve compliance with the PEP guidelines?	

Thank you.

ANNEXURE J: INTERVIEW GUIDE – OHS

Title of the study: Strategies to improve compliance to Post Exposure Prophylaxis guidelines for midwifery practitioners at specific hospitals in Gauteng Province, South Africa

Part 1: Socio - Demographic information

Age	
Gender	
Professional status (e.g. registered midwife, OHS practitioner)	
Years of experience in the current position	

Part 2: Interview Questions

Questions	Answers
• What are your experiences on implementation of PEP guidelines?	
• What are the statistics of reported cases of exposures to human and body fluids in the previous year in the institution? of those reported, how many cases were reported from maternity units?	
• Do you have the latest PEP guidelines in your unit?	
• How do you monitor the follow up of personnel affected by the occupational exposure?	
• Does the hospital offer onsite PEP services?	
• Does all affected personnel enrol with the PEP programme?	
• Is counselling or support offered to all affected individuals?	
• Do you keep record of personnel who completed course of the PEP programme?	
• What are the challenges in your experience, if any, about the implementation of the PEP guidelines?	
• In your opinion, how can the PEP programme be improved to enhance compliance?	

Thank you

ANNEXURE K: STATISTICIAN CERTIFICATE

Unicorn Central (Pty) Ltd.

3 Jacaranda Avenue

Olivedale

Johannesburg

23 June 2023

To whom it may concern.

REF: Certificate of confirmation for Research based Statistical Consultation for Ms. MOSEHLE SALOME MATLALA.

This serves to confirm that I, the undersigned, was actively involved in the statistical consultation and recommendations for the thesis:

STRATEGIES TO IMPROVE COMPLIANCE TO POST EXPOSURE PROPHYLAXIS GUIDELINES FOR MIDWIFERY PRACTITIONERS IN GAUTENG PROVINCE, SOUTH AFRICA

By

Ms. MOSEHLE SALOME MATLALA.

Sincerely

Actuarial Commercial Manager

Unicorn Central

ANNEXURE L: EDITING CERTIFICATE

Unit 3 West Square Business Park
407 West Avenue
Randburg
2194

Tel: +27 84 513 3707• Fax: 086 532 6404• e-mail: caption@webmail.co.za • P O Box 1550 • Honeydew • 2040

23 March 2023

TO WHOM IT MAY CONCERN

This serves to confirm that I have edited and made the necessary corrections and emendations to the thesis:

STRATEGIES TO IMPROVE COMPLIANCE TO POST EXPOSURE PROPHYLAXIS GUIDELINES FOR MIDWIFERY PRACTITIONERS IN GAUTENG PROVINCE, SOUTH AFRICA
by

MOSEHLE SALOME MATLALA

Sincerely

J Musi
Publisher, editor and translator