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FACTORS TO BE CONSIDERED FOR INTEGRATION OF HIV PRE-EXPOSURE PROPHYLAXIS INTO PRIMARY HEALTH SERVICES IN NORTH WEST PROVINCE, SOUTH AFRICA

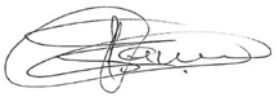
Josiah Olebogeng Jonkane

A DISSERTATION SUBMITTED TO THE FACULTY OF HEALTH SCIENCE, UNIVERSITY OF WITWATERSRAND, IN FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS IN NURSING.

Klerksdorp, 2025

DECLARATION

I, Olebogeng Jonkane, do hereby declare that this dissertation submitted to the University of the Witwatersrand, Johannesburg, for the degree of Master of Science in Nursing has not been previously submitted at this or any other University or similar institution for a degree. It is my own work design and in execution and material contained herein has been duly acknowledged.

Signature of candidate**:**  Date: **26 September 2025**

DEDICATION

To my beloved sons, Mooketsi, Motheo, Phetso, and my dear Nephew, Welheminah {Nolly} Jonkane, this work is a statement to the dreams I have for you that you will always chase knowledge, stand tall in your truth, and believe in the power of perseverance and beauty of knowledge.

You are my inspiration, my motivation, and my constant reminder of why perseverance matters. May you always chase your dreams with courage, lead with kindness, and believe in the power of your own voice.

My appreciation also goes to my family, my mother Mamampi Jonkane, my sister Fumane Jonkane, my brother Tebogo Jonkane.

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My foremost acknowledgement to God, who gave me the strength and talents to undertake my studies to this level.

Gratitude to my supervisors, Dr Amme Mardulate Tshabalala and Dr Ntombifikile Klaas. Thank you for all the encouragement, motivation and guidance, and support you have given me. Without you, this project would have been impossible.

Many thanks to Keatlegile Motswenyane for assisting with the facilitation of the focus group discussions; without your support, these discussions would have been difficult to conduct

I would sincerely thank all the participants who generously shared their time, perceptions and insights. Your willingness to contribute made this research possible, and your voices are central to the value and impact of this study.

To my employer and colleagues at The Aurum Institute in Klerksdorp, I would like to express my gratitude for your support throughout my studies.

ABSTRACT

Aim: The study aimed to explore the factors that should be considered for integrating HIV pre-exposure prophylaxis (PrEP) into primary health care services in Matlosana, North West Province. This is based on literature that shows that despite national progress in rolling out HIV (PrEP) by the World Health Organisation's endorsement in 2015 and its formal adoption by South Africa in 2016, significant challenges persist in ensuring equitable access, sustained use, and effective service integration at the primary care level. Furthermore, no studies have focused on the factors to consider for integrating HIV PrEP into primary healthcare services in Matlosana, North West Province.

Setting: The study was conducted in Community Health Centres in Matlosana, North West Province, South Africa.

Research Methodology: This study employs a two-phase sequential multi-method design, comprising a scoping review and a qualitative component. In Phase 1, a scoping review of literature guided by Arksey and O'Malley and the Joanna Briggs framework of scoping reviews was conducted. Five databases were searched for studies published between 2012 and 2022. In Phase 2, a qualitative component consisting of four focus group discussions was conducted among purposively selected Primary Health Care (PHC) Nurses. The qualitative data were analysed using thematic analysis.

Results: Findings from the scoping review and the qualitative component were merged and compared. The six emergent themes are Overall feasibility, Key facilitators, Importance of awareness, Role of stigma, Recommendations, and Specific contextual factors. To systematically assess how well this integration works in real-world settings, we applied the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) framework, which examines RE-AIM. Recommendations for clinical practice, education and further research were formulated such as investment in resources, and compliance with systems/guidelines.

Key words: HIV Pre-exposure prophylaxis; integration; community health centres; primary health care nurses.

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CHAPTER ONE
OVERVIEW OF THE STUDY

1.1 INTRODUCTION

This chapter presents the background to the study on integrating HIV Pre-exposure Prophylaxis (PrEP) into primary health care (PHC) services in Matlosana, North West Province, South Africa. It explains the rationale behind this focus, which is shaped by local epidemiological trends and health system challenges. It outlines the study's aim to examine operational and contextual factors affecting PrEP uptake and sustainability in PHC. The chapter also outlines the research objectives, prevention and service delivery strategies, key assumptions, definitions of core terms, and provides a brief overview of the methodological approach.

1.2 BACKGROUND OF THE STUDY

In 2015, the World Health Organization (WHO) formally recommended oral PrEP as an additional HIV prevention strategy, supplementing existing interventions such as Post Exposure Prophylaxis (PEP) (WHO, 2017; UNAIDS, 2022). PrEP involves the use of a daily oral antiretroviral regimen typically a fixed-dose combination of 300 mg tenofovir disoproxil fumarate (TDF) and 200 mg emtricitabine (FTC), marketed as Truvada by HIV-negative individuals who are at substantial risk of acquiring HIV (Anderson et al., 2012; Heffron & Palanee-Phillips, 2023).

PrEP service delivery requires a comprehensive package including regular HIV testing, kidney and liver function monitoring, adherence support, sexual risk reduction counseling, and drug dispensation (Ngcobo, Makhado and Sehularo, 2023). While clinical trials such as the Preexposure Prophylaxis Initiative (iPrEx) study (Grant et al., 2010) and the Partners PrEP study (Baeten et al., 2012) demonstrated PrEP's efficacy showing up to a 92% reduction in HIV acquisition when adherence is high, its real-world implementation has faced significant barriers. The Human Sciences Research Council (HSRC, 2023) noted an underwhelming PrEP uptake and high discontinuation rates in South Africa, particularly among adolescents and young women.

WHO's recommendation was aligned with the global 95-95-95 targets, which aim to have 95% of all people with HIV aware of their status, 95% of those diagnosed on sustained ART, and 95% of those on treatment virally suppressed (UNAIDS, 2023). South Africa adopted the Test and Treat All strategy in 2016, offering ART regardless of CD4 count or clinical staging to prevent horizontal and vertical transmission (NDoH, 2023).

South Africa became a pioneer in PrEP rollout in sub-Saharan Africa, initially targeting female sex workers (FSWs) in 2016, later expanding services to adolescents, young women, men who have sex with men (MSM), and tertiary institutions (NDoH, 2020). As of 2023, over 200,000 individuals have initiated PrEP through initiatives such as the DREAMS (Determined, Resilient, Empowered, AIDS-free, Mentored, and Safe) partnership (George et al., 2020; Methazia, 2023).

Despite expansion efforts, sustained PrEP use remains a challenge. Studies have shown that most PrEP users discontinue within the first 1–3 months, driven by side effects, social stigma, and lack of adherence support (Rousseau et al., 2021; Van Heerden et al., 2022). LoVette et al. (2022) and Shamu et al. (2021) emphasize that PrEP was primarily introduced via vertical programmes, limiting reach beyond specific demographics. Furthermore, awareness of PrEP remains low among adolescents and young adults, underscoring the need for broader community-level education efforts.

In response, Calabrese, Krakower, and Mayer (2017) advocate for the integration of PrEP into routine primary care, a sentiment echoed in the South African National Department of Health's guidelines, which aim to merge PrEP with sexual and reproductive health services. However, Methazia (2023) and Ngcobo, Makhado and Sehularo (2023) note that this integration remains insufficient, with limited reach among general primary health care users and missed opportunities for comprehensive education on PrEP availability.

To address this, the North West Province Department of Health, in partnership with NGOs funded through the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), has begun offering PrEP at primary care clinics. Registered nurses deliver

these services but face sustainability issues due to reliance on external funding and the limited clinical training of nurses (Ngcobo, Makhado and Sehularo, 2023).

Primary Health Care nurses are strategically positioned to lead sustainable PrEP delivery if adequately supported. However, to date, no significant studies have focused on the perceptions of PHC nurses regarding their role in PrEP delivery. Phillips et al. (2020) called for such research to inform better integration of PrEP services, highlighting factors such as streamlined workflows and provider preparedness as key to success.

Integrating PrEP into existing Primary Health Centre systems, supported by a skilled PHC nursing workforce, presents a viable path to improving service delivery, adherence, and reducing new HIV infections across South Africa.

1.3 PROBLEM STATEMENT

Despite national progress in rolling out PrEP since the World Health Organization's endorsement in 2015 and its formal adoption by South Africa in 2016 (WHO, 2017; NDoH, 2020), significant challenges persist in ensuring equitable access, sustained use, and effective service integration at the primary care level. The North West Province continues to bear a substantial HIV burden, with approximately 13.5% of the population living with HIV, including a high prevalence among women of reproductive age (SANAC, 2023). PrEP services have been introduced in the research setting in line with this national rollout, but their implementation at PHC facilities in the North West Province, including Matlosana, has been uneven, with uptake remaining poor and continuation rates particularly low (HSRC, 2022).

The rationale for this investigation stems from both epidemiological urgency and health systems constraints. While PrEP has demonstrated clinical efficacy in reducing HIV acquisition among high-risk populations (Grant et al., 2010; Baeten et al., 2012), real-world implementation, especially in decentralized, nurse-led PHC settings has been hindered by low awareness, poor continuation rates, workforce capacity gaps, and systemic fragmentation (Methazia, 2023; Ngcobo, Makhado and Sehularo, 2023). These challenges explain the decision to focus this study on factors influencing

integration, as they directly impact the ability of community health centers to deliver PrEP effectively and sustainably

These challenges explain the decision to focus this study on factors influencing integration, as they directly impact the ability of community health centers to deliver PrEP effectively and sustainably These issues are compounded in peri-urban and township contexts like Matlosana, where barriers such as stigma, limited health education, and resource limitations further undermine PrEP uptake and sustainability (Shamu et al., 2021; Rousseau et al., 2021). The persistence of these barriers raise critical concerns about the ability of CHC to support not only initial uptake but also the long-term sustainability of PrEP delivery.

1.4 RESEARCH QUESTION

The question at the heart of this research is: “Which factors should be considered for integrating HIV Pre-exposure prophylaxis into primary health care services in Community Health Centres in Matlosana, North-West Province?”

1.5 PURPOSE OF THE STUDY

Given the above-mentioned research question, the study aimed to explore the factors that should be considered for integrating HIV PrEP into primary health care services in Matlosana, North West Province.

1.6 OBJECTIVES OF THE STUDY

The objectives of the study were to:

1 Review existing literature on factors to consider for integrating HIV PrEP into primary health care services (Phase 1).

2 Explore and describe the nurses’ perceptions of PrEP integration into primary health care services (Phase 2).

1.7 SIGNIFICANCE OF THE STUDY

This study may add to the body of literature on the factors to be considered for integrating HIV PrEP into primary health care services. The findings could inform task scheduling, task shifting, and planning processes. The recommendations emanating from the study may be used by key government sectors like the Department of Health and municipal health departments to plan and integrate HIV PrEP into primary health care services.

1.8 RESEARCHER'S ASSUMPTIONS

Assumptions are foundational beliefs or propositions accepted as accurate without direct empirical validation, underpinning and guiding the research process (Gray, Grove and Sutherland, 2021). Though unproven, these beliefs are necessary for framing the researcher's worldview and shaping methodological decisions. Within this study, the assumptions are positioned within a meta-theoretical framework, which provides a philosophical and conceptual lens through which the phenomena of interest are understood and interpreted. Meta-theoretical assumptions reflect the researcher's stance on the nature of reality (ontology), the nature of knowledge (epistemology), and the methodological approaches deemed appropriate for inquiry (Creswell and Creswell, 2017).

1.8.1 Meta-theoretical assumptions

Meta-theoretical assumptions refer to the underlying philosophical beliefs that inform a researcher's choices regarding methodology, methods, and the interpretation of findings within a specific research project. These assumptions, whether explicitly acknowledged or implicitly held, shape the way a researcher approaches knowledge generation and meaning making (Gray, Grove, and Sutherland, 2021; Creswell and Creswell, 2017).

Ontology

Ontology concerns the nature of reality and what can be known about that reality (Lincoln, Lynham, and Guba, 2011). In this study, the ontological stance reflects a belief that nurses possess experiential and contextual knowledge regarding the integration of HIV PrEP into primary health care (PHC) services. However, the researcher recognises that despite this knowledge, gaps and inconsistencies in practice may still exist. These gaps present an opportunity for collaborative reflection and participatory dialogue, allowing nurses to contribute actively to developing interventions for more effective integration of HIV PrEP services within PHCs.

Epistemology

Epistemology, in the context of this study, refers to the assumptions about how knowledge of the integration of PrEP into PHC is generated, validated, and interpreted. It seeks to answer the question of how the researcher knows what they know about the phenomenon under investigation. Drawing on Creswell and Creswell (2017), epistemology frames the researcher's stance on the nature and legitimacy of knowledge claims.

This study is guided by a pragmatic epistemological position, which emphasises that knowledge is not absolute but shaped by context, experience, and utility. From this perspective, what counts as "knowing" emerges from the interaction between the researcher, participants, and the practice environment. Knowledge about PrEP integration is therefore constructed through nurses' experiences, clinical practices, and the systemic realities of PHC services.

By employing empirical methods, the researcher interprets participants' accounts not only as subjective narratives but also as valuable insights that can inform health service delivery. Thus, the study acknowledges that knowing occurs through a dynamic process of engagement, where meaning is co-constructed and judged by its practical usefulness in addressing HIV prevention challenges. In this way, epistemology shapes both the questions asked and the interpretation of findings, ensuring that the knowledge generated is grounded, relevant, and action-oriented.

1.8.2. Theoretical assumptions

Theoretical assumptions encompass the conceptual frameworks, models, or theories that guide the research process and provide a structured lens through which the study's questions are explored and interpreted (Creswell and Creswell, 2017). These assumptions establish the foundation for understanding the phenomena under investigation and influence the selection of research methods, data interpretation, and the formulation of conclusions.

This study is underpinned by the RE-AIM theory, a well-established implementation science model designed to evaluate the feasibility, effectiveness, and real-world applicability of public health interventions (Glasgow et al., 2019). The acronym RE-AIM stands for Reach, Effectiveness, Adoption, Implementation, and Maintenance, and provides a comprehensive structure for examining both the outcomes and the processes associated with intervention delivery.

In this context, the RE-AIM theory was applied to systematically assess how well this integration works in real-world settings, we applied the RE-AIM framework, which examines Reach, Effectiveness, Adoption, Implementation, and Maintenance.

The framework includes five dimensions described and below and the application in this study is indicated in Table 1-1.

- **Reach**

Reach refers to the proportion and characteristics of individuals affected by or participating in a given health intervention. In the context of this study, it pertains explicitly to at-risk population that takes PrEP. Evaluating reach involves assessing the extent to which the programme is accessible and inclusive of the target group (Glasgow et al., 2019). REACH assessed the situation from literature and from the participants strategies to be implored to educate communities about PrEP availability.

- **Effectiveness**

Effectiveness (or efficacy in controlled settings) relates to the impact of the intervention on desired outcomes, including both intended benefits and unintended consequences. For HIV PrEP programmes, this dimension encompasses behavioural outcomes, participant satisfaction, adherence, and quality of life, as well as biomedical indicators such as reduced HIV acquisition. Importantly, effectiveness is assessed under routine clinical conditions to reflect real-world utility (Glasgow et al., 2019; Harden et al., 2020). Effectiveness was assessed by combining evidence from scoping review and focus group discussions which highlighted the barriers and facilitators of integrating PrEP into PHC services.

- **Adoption**

Adoption reflects the extent to which settings and stakeholders such as community health centres are willing and able to initiate an HIV PrEP intervention. This dimension considers both the proportion and representativeness of clinics or organisational units implementing the programme. In this study, adoption was explored through focus group discussions and a scoping review, which helped identify contextual barriers and facilitators to implementation (Glasgow et al., 2019; Rabin et al., 2019).

- **Implementation**

Implementation examines the fidelity and quality with which an intervention is delivered, both at the individual and organisational levels. It includes the degree to which PHC staff follow prescribed procedures and whether clients adhere to the PrEP regimen. In this study, implementation was assessed through a scoping review and participant perceptions, allowing for the evaluation of service delivery consistency, staff capacity, and resource adequacy (Glasgow et al., 2019).

- **Maintenance**

Maintenance refers to the long-term sustainability of an intervention at both the individual and system levels. It evaluates whether the behavioural changes prompted by the intervention are retained over time and whether the programme becomes institutionalised within the routines and culture of the health care setting. For HIV PrEP, this includes the integration of services into ongoing PHC practice and consistent support for clients beyond the initial rollout phase (Glasgow et al., 2019; Shelton et al., 2020).

Together, these dimensions provide a holistic evaluation of the public health impact of HIV PrEP implementation. The RE-AIM model encourages both formative and summative assessment, facilitating evidence-based improvements in programme design and delivery. The overall quality and success of an intervention can be conceptualised as a multiplicative function of all five dimensions, reinforcing the interdependence of reach, effectiveness, adoption, implementation, and maintenance.

Table1-1 RE-AIM framework

RE-AIM Evaluation Dimensions		
Dimension	Level	Context of study
Reach (proportion of the target population that participated in the intervention)	Individual	At-risk population
Efficacy (success rate if implemented as in guidelines; defined as positive outcomes minus negative outcomes)	Individual	Uptake and retention of PrEP
Adoption (proportion of settings, practices, and plans that will adopt this intervention)	Organisation	Implementation of PrEP in PHC settings
Implementation (the extent to which the intervention is implemented as intended in the real world)	Individual and Organisation	PrEP service adaptation into PHC services

Maintenance (the extent to which a program is sustained over time)	Individual and organisational	Institutionalisation of PrEP services in the PHC settings
The product of the 5 dimensions is the public health impact score (population-based effect).		

1.9. Operational definitions

For simplicity and consistency in understanding the concepts used in this study, the following key concepts are defined:

- **Community Health Centre**

This facility provides primary health care services, operates 24 hours a day, and has beds to observe patients for not more than 48 hours (NDoH, 2020). This study's definition applies to the four CHCs in the Matlosana, North West Province.

- **Primary Health Care**

Is a comprehensive, people-centred approach to health service delivery that encompasses health promotion, disease prevention, diagnosis and treatment, rehabilitation, and palliative care. It serves as the foundation of a strong and equitable health system by addressing the majority of an individual's health needs across the life course and within the community context (WHO, 2022). In this study, HIV PrEP is conceptualised as an integral component of this comprehensive PHC strategy, rather than as a vertical, stand-alone programme limited to select high-risk groups.

- **Perceptions**

These are defined as how something is regarded, understood, or interpreted (Merriam-Webster, 2020). In this study, perception refers to primary health care nurses' views or opinions regarding HIV PrEP integration into primary health care services.

- **Primary health care nurse**

In the context of this study, a PHC nurse will be a professional nurse with an additional qualification referred to as Diploma in Clinical Nursing Science, Health Assessment, Treatment, and Care. PHC Nurses are responsible for integrating HIV PrEP into primary health care services (SANC, 2014).

- **Integration**

The provision of health services so that clients receive a continuum of preventive and curative services, according to their needs over time and across different levels of the health system (WHO, 2020). In this study, integration refers to incorporating HIV PrEP into primary health care services.

- **Pre-exposure prophylaxis**

Refers to the use of ARV drugs by HIV-negative individuals to reduce the acquisition of HIV infection (WHO, 2020).

- **LGBTQ+**

LGBTQ+ is an acronym that stands for Lesbian, Gay, Bisexual, Transgender, and Queer/Questioning, with the “+” symbol representing a spectrum of additional sexual orientations, gender identities, and expressions (such as intersex, asexual, pansexual, non-binary, and others) (Human Rights Campaign, 2019).

- **Transgender**

The term transgender is an umbrella concept describing individuals whose gender identity and/or gender expression differ from the sex they were assigned at birth (American Psychological Association [APA], 2015).

1.9 OVERVIEW OF RESEARCH METHODOLOGY

This section provides an overview of the research methodology. A detailed description will be provided in Chapter 3.

The study employed a two-phased sequential multi-method design consisting of a scoping review and a qualitative component. In Phase 1, the scoping review followed a five-stage framework laid out by Arksey and O'Malley (2015) which was later advanced and described by Levac, Colquhoun, and O'Brien (2010) and the Joanna Briggs Institute (Peters et al., 2020).

Joanna Briggs guidelines (Peters et al., 2020) framework. All primary studies published in peer-reviewed journals on factors that should be considered for the integration of HIV PrEP into primary health care services were reviewed. Five databases were searched, and the results of the search were reported using the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA-ScR) flow diagram (Peters et al., 2020).

In Phase 2, four focus group discussions were conducted using an interview guide among purposively selected Primary Health Care Nurses at four Community Health Centres in Matlosana, North West Province. The data were analyzed using qualitative thematic analysis (Braun and Clarke, 2021). Before the study began, institutional and participant permissions were obtained, and the participants' ethical rights were respected.

1.10 CHAPTER OUTLINE

This study consists of six chapters.

Chapter 1 introduces the study, detailing the background, problem statement, research question, study aim, objectives, significance, assumptions, and theoretical framework. The chapter concludes with a set of operational definitions.

Chapter 2 offers a contextual overview, including HIV and AIDS prevalence, an examination of PHC services in South Africa, current HIV prevention strategies, and concludes with a discussion on the integration of HIV PrEP into PHC.

Chapter 3 outlines the research methodology. It presents the study's purpose, objectives, and justification for the scoping review, the study setting and design, methods for data collection and analysis, and ethical considerations.

Chapter 4 presents the findings of the scoping review. It includes the formulation of the research question, identification and selection of relevant studies, data charting, synthesis, and reporting. The chapter also describes the characteristics of the included studies, the thematic analysis, and ends with a discussion of the findings.

Chapter 5 covers the qualitative component of the study. It includes participant demographics, emergent themes, categories and subcategories, and concludes with a comprehensive discussion of the qualitative findings.

Chapter 6 presents the overall summary of the study. It includes summary of the study, summary of main findings and interpretation, application of theory to the findings, limitations of the study and the recommendations arising from the study.

1.11 SUMMARY

This chapter presented an introduction and background information that led to exploring the factors that should be considered for integrating HIV PrEP into primary health care services. It also included the research problem and question, the aim and objectives of the study, the researcher's assumptions, operational definitions, and an overview of the research methodology.

The next chapter presents the literature review.

CHAPTER TWO
LITERATURE REVIEW

2.1 INTRODUCTION

This chapter details a literature review covering the landscape of HIV and AIDS, the primary health care services in South Africa, and the integration of HIV PrEP into primary health care services.

2.2 OVERVIEW OF HIV AND AIDS

2.2.1 Globally

The global HIV epidemic continues to pose a significant public health challenge, despite notable progress over the last decade. By the end of 2023, an estimated 39.9 million people were living with HIV worldwide, up from 31.3 million in 2010. That same year saw 1.3 million new HIV infections globally, reflecting a 39% reduction in new infections since 2010, though the 2025 targets have not yet been met (UNAIDS, 2024).

Encouraging trends are evident among children and adolescents. New infections among children aged 0–14 declined by 62%, from 300,000 in 2010 to 120,000 in 2023, highlighting the positive impact of targeted prevention and treatment interventions. Among young people aged 15–24, infection rates also declined: approximately 210,000 adolescent girls and young women and 140,000 adolescent boys and young men acquired HIV in 2023, representing reductions of 50% and 44% from 2010 levels, respectively (UNAIDS, 2024).

Access to antiretroviral therapy (ART) has expanded substantially. By the end of 2023, 30.7 million people living with HIV were receiving ART, accounting for 77% of all individuals living with HIV a substantial increase from 7.7 million in 2010. However, the global 2025 target of 34 million remains unmet. Sub-Saharan Africa, Asia, and the Pacific collectively account for approximately 82% of people living with HIV, with notable gains in ART coverage in these regions (UNAIDS, 2024).

Progress toward the UNAIDS 95-95-95 targets has improved globally. In 2023, 86% of people living with HIV knew their status; of those, 89% were on treatment, and 93% of those on treatment achieved viral suppression (UNAIDS, 2024). Nonetheless, disparities persist, especially among men, children, and key populations facing stigma and structural barriers.

The global AIDS response has been supported by partnerships between governments, communities, and international donors such as PEPFAR, the Global Fund, and private sector partners. These collaborations have been crucial for scaling up life-saving interventions and strengthening healthcare infrastructure in resource-limited settings (PEPFAR, 2024; Global Fund, 2023). The diagram below (figure 2.1) illustrates the building blocks of a successful HIV response, highlighting the integrated role of prevention, treatment, care, support, and enabling environments in sustaining these global gains.

2.2.2 Sub-Saharan Africa

Several countries in Sub-Saharan Africa (SSA), including Botswana, Eswatini, Rwanda, Tanzania, and Zimbabwe, have already achieved the ambitious 95-95-95 HIV treatment targets. At least eight other SSA countries are on track to meet these milestones (UNAIDS, 2023). These targets aim to ensure that 95% of people living with HIV know their status, 95% of diagnosed individuals receive ART, and 95% of those on ART achieve viral suppression.



Figure 2.1 – Building blocks for a successful HIV response **Source: UNAIDS Global AIDS Update (2023)**

2.2.3 South Africa

South Africa continues to bear the world's largest HIV epidemic, with marked regional variation in prevalence and treatment outcomes. Free ART was introduced in 2004, with substantial program expansion post-2016 reinforcing national efforts to control HIV (Karim and Baxter, 2016).

The country initially adopted the 90-90-90 targets in 2014 alongside a universal test-and-treat strategy to ensure that 90% of people living with HIV know their status, 90% of those diagnosed receive sustained ART, and 90% of those on ART achieve viral suppression (UNAIDS, 2014b). As global strategies evolved, South Africa aligned with the more ambitious 95-95-95 targets introduced in 2020.

By 2022, South Africa had made significant progress toward these benchmarks: 94% of people living with HIV were aware of their status, 79% of those diagnosed were on ART, and 93% of those on ART achieved viral suppression (UNAIDS, 2023). While progress is evident, gaps remain in treatment initiation and retention.

The Human Sciences Research Council (HSRC) reported a decline in HIV prevalence among South Africans aged 15–49, from 14.0% in 2017 to 12.7% in 2022, corresponding to approximately 7.8 million people living with HIV in 2022, slightly lower than 7.9 million in 2017 (HSRC, 2023). Regional disparities necessitate targeted interventions, especially in the North West Province, the focus of this study.

The next section will examine HIV prevalence, key populations, and structural factors influencing the epidemic in North West, laying the foundation for evaluating the integration of pre-exposure prophylaxis (PrEP) into primary health care services.

2.2.4 NORTH WEST PROVINCE

The North West Province faces a substantial HIV epidemic, with an estimated 503,766 people living with HIV in 2016, representing a prevalence of 13.5%. Of these, 26,790 were children under 15 years (Provincial Implementation Plan Northwest, 2017). A concerning aspect of the epidemic is its feminized nature, with a prevalence of 25,5%

among women of reproductive age (15-49) compared to 14,5% of men among the same age group (Provincial Implementation Plan Northwest, 2017).

HIV is also concentrated among key populations such as sex workers, men who have sex with men (MSM), and transgender individuals (NDOH, 2016). Prevalence varies across districts: Bojanala Platinum (13.3%), Ngaka Modiri Molema (11.9%), Dr Kenneth Kaunda (12.9%), and Dr Ruth Mompati (11.6%) (Provincial Implementation Plan Northwest, 2017).

According to the most recent national census data, the population of the City of Matlosana is approximately 397,000 individuals (Stats SA, 2022). The majority of residents are Black African, with a relatively youthful demographic profile and high dependency ratios (Mabaso et al., 2021). The region is historically shaped by the mining economy, which continues to influence patterns of labour migration, gender dynamics, and household structures. Unemployment rates remain high, exacerbating health vulnerabilities.

In Matlosana, a mining and peri-urban setting with historically high HIV prevalence, HIV-negative individuals in key populations are especially vulnerable due to high mobility, economic inequality, and limited health-seeking behaviours (Shisana et al., 2014). Community members often delay seeking formal healthcare due to stigma, lack of privacy in health facilities, and economic constraints (Gogela et al., 2020; Nyoni et al., 2019). Strengthening PrEP services for HIV-negative at-risk populations in this context is therefore essential to reducing new infections and advancing epidemic control.

This localized data highlights the importance of understanding the specific dynamics of the HIV epidemic within the North West Province to inform effective prevention strategies, including the integration of PrEP into primary health care services within this context.

2.3 PRIMARY HEALTH CARE SERVICES IN SA

Primary health care (PHC) is recognized as the foundation of effective healthcare delivery. Developed through the Alma-Ata Declaration (WHO, 1978), PHC emphasizes accessible, comprehensive, and continuous care, including prevention and management of chronic conditions (Abrahams, Thani, & Kahn, 2022).

PHC facilities, including community health centres (CHCs) and clinics, provide 24-hour or day services. Multidisciplinary teams, including doctors, nurses, pharmacists, and allied health professionals, deliver care. Despite this infrastructure, South Africa's two-tiered health system faces sustainability challenges. The National Health Insurance (NHI), which has been piloted since 2012, aims to ensure equitable access to health services, with complete implementation expected by 2025.

The General Household Survey (GHS) (2022:21) indicates that 73% of households use public clinics, hospitals, or other public institutions as their first point of access to healthcare services. Additionally, the GHS reports that medical aid schemes cover 15.8% of individuals. Similarly, the minister of health of South Africa reported that 84% of South Africans make use of public health care services, while the remaining 16% utilise private health care services (Turner, 2021).

These statistics underscore the critical role of the public healthcare system in South Africa, highlighting its centrality in delivering primary health care (PHC) services to the majority of the population. This has direct implications for the implementation of the National Health Insurance (NHI), which aims to strengthen equity and universal access by shifting health system financing toward a more unified and publicly funded model (Department of Health, 2017).

The NHI has the potential to significantly enhance the delivery and integration of preventive interventions, such as Pre-Exposure Prophylaxis (PrEP), into PHC. By increasing investment in infrastructure, staffing and service availability across the public sector, NHI could support the broader and more equitable distribution of PrEP, especially to high-risk and underserved populations. This alignment reinforces the need to integrate HIV prevention strategies like PrEP into PHC platforms, ensuring

that they reach those who are most dependent on public services, particularly in high-prevalence provinces such as the North West.

2.4 HIV PREVENTION STRATEGIES

HIV prevention remains central to public health efforts, particularly in high-prevalence countries like South Africa. A combination approach incorporating biomedical, behavioural, and structural strategies has proven to be most effective (UNAIDS, 2022). This section outlines key prevention methods, including condom use, voluntary medical male circumcision (VMMC), HIV testing and counselling (HTC), and biomedical tools like Pre-Exposure Prophylaxis (PrEP), with a focus on their relevance to primary health care and priority populations (SANAC 2023; WHO, 2022).

2.4.1 HIV COUNSELLING AND TESTING

Since 2003, the HIV response has intensified drastically with the introduction of the President's Emergency Plan for AIDS Relief (PEPFAR). HIV counselling and testing (HCT) has been scaled up with millions of tests performed annually (Rosenberg et al., 2016). Individual and couple HCT are essential for linking HIV-infected persons to HIV treatment, which reduces morbidity, mortality, and horizontal and vertical transmissibility (Rosenberg et al.,2016). HCT consists of three components: pretest counselling, HIV testing, and post-testing counselling. During pretest counselling, modes of HIV transmission as well as behavioural HIV prevention measures are discussed. HIV testing is conducted with rapid tests with results available in real time. Post-test counselling involves the disclosure of results with differentiated messages for HIV-infected and HIV-uninfected clients.

2.4.2 CONDOM USE

According to the World Health Organisation (2017), the correct and consistent use of condoms either male or female during vaginal and/or anal sexual intercourse can protect against the spread of sexually transmitted infections, including HIV. The WHO showed through its study that male latex condoms have about 85% or greater protective effect against HIV and other sexually transmitted infections (STIs). There

has been a sustained effort to make condoms accessible through the free condom programme funded by the government to minimise the risk of sexual transmission of HIV (Health System Trust, 2013). It is estimated that over 399 million male condoms are distributed annually by this programme (Health System Trust, 2013).

Evidence indicates that condom use remains one of the most effective methods for preventing the sexual transmission of HIV and has played a crucial role in reducing HIV infections and prevalence across diverse global settings (UNAIDS, 2020). Studies from Brazil, Cambodia, Tanzania, Thailand, Uganda, and urban Zambia consistently demonstrate that condom promotion and accessibility are central components of successful HIV prevention strategies (UNAIDS, 2008). For example, Thailand's 100% Condom Use Programme led to a dramatic drop in HIV incidence among sex workers and the general population (Rojanapithayakorn and Hanenberg, 1996). In Brazil, widespread condom distribution and public campaigns contributed to stabilizing the HIV epidemic in key populations (Bastos et al., 2009).

Similarly, condom-based interventions in Cambodia were associated with reduced prevalence among sex workers (WHO, 2004), and Uganda's multisectoral HIV strategy highlighted condom promotion alongside abstinence and fidelity as part of the "ABC" approach (Green et al., 2006). In Tanzania and urban Zambia, studies have shown increased condom use correlates with decreased HIV transmission among high-risk groups (UNAIDS, 2008).

2.4.3 STD SCREENING AND TREATMENT

The relationship between STDs and HIV is both complex and synergistic. Untreated STIs increase by several-fold the risk of sexual HIV transmission due to mucosal disruption and increased HIV shedding in genital secretions (Looker et al., 2020). Numerous epidemiological studies (Freeman et al., 2006) have supported the association of genital ulcers and genital herpes with HIV infection. Therefore, implementing a program to treat and prevent STIs should be an effective HIV intervention (Wegbreit et al,.2006). Evidence from studies conducted in diverse settings, including Kenya, San Francisco, and South Africa shows that STI treatment

programs decrease both HIV and STI incidence (Wegbreit et al., 2006; Mujugira et al., 2013; Galvin & Cohen, 2004**).**

2.4.4 NEEDLE EXCHANGE PROGRAMMES

Evidence of research has shown that needle and syringe programmes prevent, control and ultimately reduce the prevalence of HIV and other blood-borne infections among injecting drug users (WHO,2007). Providing access to and encouraging the utilisation of sterile needles and syringes for injecting drug users (IDUs) is generally considered to be a fundamental component of any comprehensive and effective HIV prevention programme. A variety of measures have been developed to improve access to and utilization of sterile injecting equipment, including needle syringe programme (NSP), strategies for disinfecting needles and syringes where they are reused or exchange schemes, vending machines, and other distribution programmes, policies and programmes to encourage more appropriate disposal of used needles and syringes, and injecting paraphernalia legislation (WHO, 2005).

Recent evidence reinforces these findings, showing that Needle and Syringe Programmes (NSPs) not only reduce HIV and hepatitis C transmission but also enhance engagement with treatment services when combined with opioid agonist therapy such as methadone or buprenorphine (Stone et al., 2018; Larney et al., 2020; WHO, 2022). Systematic reviews, including Abdul-Quader et al. (2013), demonstrate that structural-level NSPs those implemented at community or programmatic levels rather than as individual interventions are effective in reducing HIV and HCV incidence among people who inject drugs. Innovative models such as mobile exchange units, peer-led secondary distribution, supervised consumption sites, and vending machines have further improved reach and facilitated linkage to HIV testing, counselling, and harm reduction services (UNAIDS, 2021; Beletsky & Crawford, 2023). Contemporary reviews also highlight NSPs as highly cost-effective interventions and emphasize the need to remove legal and structural barriers to scale-up, particularly in low- and middle-income countries (UNAIDS, 2022; Iversen et al., 2023).

Building on these interventions, the strategies these programmes use to reverse existing HIV epidemics in IDUs include:

- Ensuring access to clean injecting equipment and removing contaminated equipment from circulation
- Expanding drug dependence treatment (such as providing methadone or buprenorphine); and
- Peer-based outreach to distribute HIV prevention materials and to provide information about HIV testing, counselling, and drug treatment.

2.4.5 VERTICAL TRANSMISSION PREVENTION (VTP) PROGRAMME

Prevention of MTCT is a package consisting of aspects of the specific interventions (WHO, 2010). These include the following:

- **Use of antiretroviral therapy**

Available evidence from numerous studies shows that the provision of antiretroviral drugs (nevirapine, lamivudine, and zidovudine) to infected mothers significantly reduces vertical transmission (WHO, 2010).

- **Avoidance of unwanted pregnancy**

One of the most effective strategies to reduce HIV among infants is to provide better contraception services to infected mothers (Sherwood et al., 2021). In one of the modelling studies, it was estimated that in a population of 1,000 HIV-infected women, approximately 150 infants would be infected with HIV during delivery (Wegbreit et al., 2006). If nevirapine were available, the number of infected infants would be reduced to 82 (the expected 47% decline) (Wegbreit et al., 2006). If effective contraceptive services were available, this number would be reduced to 49. If both strategies were adopted, the number of infected infants would be further reduced to 25 (Wegbreit et al*.,* 2006).

- **Feeding substitution**

Complete avoidance of breastfeeding has been widely recommended for HIV-infected mothers in developed countries to prevent postnatal HIV transmission (WHO, 2010). However, the feasibility of this approach in less developed countries is often limited by factors such as cost, sustainability, lack of safe water, health infrastructure, child spacing, and socio-cultural norms (Wegbreit et al., 2006; Coutsoudis et al., 2001). One study suggested that mixed feeding (i.e., combining breast milk with formula or other substances) may carry a higher risk of transmission than exclusive breastfeeding (Wegbreit et al., 2006). Exclusive breastfeeding may offer HIV-infected women an affordable, culturally acceptable, and effective means of reducing mother-to-child HIV transmission while preserving the numerous benefits of breastfeeding for both mother and child (Wegbreit et al., 2006; Coutsoudis et al., 2001).

2.4.6 VOLUNTARY MEDICAL MALE CIRCUMCISION (VMMC)

Medical male circumcision (MMC), when safely performed by well-trained health professionals, decreases HIV risk within men in heterosexual relationships by 60 per cent (Auvert et al., 2005; Bailey et al., 2007). MMC is adopted in many countries as an effective prevention option for men and has been proven to be effective in African countries where HIV incidence is high, while circumcision completions are low (Shisana et al., 2014). While there is evidence that male circumcision reduces HIV transmission from female to male, circumcised men can still become infected with HIV, and HIV infected men can infect others. The WHO (2007) made it clear that male circumcision should never replace other known effective prevention methods and should always be considered as part of a comprehensive prevention package, which includes the correct and consistent use of condoms, reduction in the number of sexual partners, delaying the onset of sexual relations, and HIV testing and counselling (WHO, 2007).

2.4.7 HIV PRE-EXPOSURE PROPHYLAXIS (PREP)

The US Food and Drug Administration approved the first HIV preexposure prophylaxis (PrEP) agent for prescription: tenofovir disoproxil fumarate with emtricitabine

(Truvada) in 2012 (FDA, 2012). This daily oral antiretroviral medication is effective in protecting HIV-negative adults from acquiring HIV and is indicated for those at risk because of sexual behaviour, injection practices, or both. In 2015, the World Health Organization endorsed the use of HIV PrEP as an additional strategy for protecting people from acquiring the human immunodeficiency virus (HIV) (WHO, 2017). As opposed to the Post-exposure Prophylaxis (PEP) administered after HIV exposure, the PrEP regimen entails giving HIV-negative people at substantial risk of acquiring the infection an option to use HIV antiretroviral drugs to prevent being infected.

The endorsement of HIV PrEP was not an isolated initiative towards the prevention of the spread of HIV. It was implemented alongside the goal of meeting the 90-90-90 targets which entail 90% of all people living with HIV know their status, 90% of all people diagnosed with HIV infection receive sustained antiretroviral therapy, and 90% of all people receiving antiretroviral therapy have viral suppression by offering all HIV-positive people antiretroviral therapy (ART), regardless of their CD4 count and clinical staging, which will prevent both horizontal and vertical transmission of HIV (WHO, 2017). In June 2021, the strategy was updated to 95-95-95 to improve HIV prevention and treatment.

The HIV PrEP regimen has been proven to be an effective strategy in the prevention of HIV infection. Pre-exposure Prophylaxis Initiative clinical trial studies were conducted to test the efficacy of a combination of two oral antiretroviral drugs, emtricitabine and tenofovir disoproxil fumarate (FTC–TDF) in protecting the acquisition of HIV infection (Grant et al., 2010; Anderson et al., 2012). Findings in both studies demonstrated that Oral TDF and FTC/TDF provided substantial protection against HIV-1 acquisition. Grant et al. (2010) reported an overall 44% reduction in HIV acquisition among men who have sex with men (MSM) and transgender women receiving PrEP and greater than 90% efficacy among those with detectable drug levels in blood samples. Baeten et al. (2012) randomized, three-arm trial of oral antiretroviral PrEP showed effectiveness among heterosexual couples from Kenya and Uganda. Where else Fonner et al. (2016) systematic review and meta-analysis demonstrated the safety and effectiveness of PrEP regimens in significantly reducing the risk of HIV acquisition in 16 of the 39 articles analysed of the general population.

In 2016, a year after the WHO endorsed the use of HIV PrEP, the South African National Department of Health (NDoH) embraced the recommendation. Guidelines were developed for HIV PrEP implementation. In the South African context, female sex workers (FSW) were identified as a priority group, and the HIV PrEP programme was introduced in four stages at 34 pilot implementing sites (NDOH, 2016). Later the HIV PrEP programme was expanded to include institutions of higher learning sites, men who have sex with other men (MSM), young women, and adolescent girls (aged 10–24 years) at high risk. The current preferred regimen in South Africa is oral TDF/FTC as a fixed-dose combination (NDOH, 2020).

While HIV PrEP has emerged as a highly effective biomedical intervention in preventing HIV acquisition (Grant et al., 2010; Anderson et al., 2012), its full potential in curbing the HIV epidemic hinges not only on its efficacy but also on its accessibility and widespread uptake. Recognizing the crucial role of primary health care (PHC) as the first point of contact for many individuals and its extensive reach within communities, integrating PrEP services into these settings holds significant promise for increasing access, normalizing its use, and ultimately maximizing its impact on HIV prevention efforts. The following section will therefore explore the literature surrounding the integration of HIV PrEP into primary health care services, examining the various models, challenges, and opportunities associated with this crucial step in the broader HIV prevention landscape.

2.5 INTEGRATION OF HIV PREP INTO PRIMARY HEALTH CARE SERVICES

Pre-exposure prophylaxis (PrEP) was approved by the FDA in 2012 as a significant biomedical advance with the capacity to significantly reduce HIV incidence and shift the course of the epidemic (Grant et al., 2010). This daily oral regimen, consisting of tenofovir disoproxil fumarate and emtricitabine, has proven highly effective in preventing HIV among men who have sex with men (MSM), heterosexual individuals, and people who inject drugs (Anderson et al., 2012). Nevertheless, its broader public health impact has been constrained by inconsistent adoption in clinical settings and selective communication about its use. Evidence shows that provider uncertainty and bias frequently determine who is offered PrEP, narrowing its reach among those most at risk (Calabrese, Krakower, & Mayer, 2017).

In recent years, however, PrEP has been progressively incorporated into national HIV prevention policies and expanded through demonstration and implementation projects across diverse settings (Donnell et al., 2021). A notable development occurred in South Africa in November 2017, when the South African Medical Research Council convened a national summit to reassess prevention standards in HIV trials. The meeting resulted in a formal recommendation that all trial participants be given access to PrEP at local sites. The ECHO (Evidence for Contraceptive Options and HIV Outcomes) study was among the first to act on this recommendation, introducing PrEP across its nine South African locations. Implementation required substantial preparation, including community engagement, staff training, regulatory approval, and the establishment of on-site distribution (Donnell et al., 2021). This experience demonstrates how aligning policy, infrastructure, and community involvement is essential to successfully embedding PrEP within broader HIV prevention efforts.

- **Models of PrEP integration**

The integration of PrEP (pre-exposure prophylaxis) into routine health services has become a critical component of HIV prevention strategies worldwide (WHO, 2022)**.** Several models have emerged in different countries to optimize the delivery of PrEP based on local contexts, infrastructure, and population needs. One widely adopted approach is the on-site PrEP specialist model, where a designated provider or counselor within a healthcare facility is responsible for PrEP initiation and management. This model ensures focused expertise and adherence support, though it may not be scalable in low-resource settings due to workforce limitations (Bemelmans et al., 2014). In addition, the "All-Trained" model, where all healthcare providers in a clinic are trained to offer PrEP, has shown promise in increasing access and normalizing PrEP delivery in primary care (Krakower and Mayer, 2016). However, concerns have been raised regarding variability in service quality and the challenges of maintaining comprehensive training across large teams (Krakower and Mayer, 2016).

Some health systems have adopted a referral-out model, linking primary care services with external PrEP providers, often community-based organizations. This model leverages the strengths of specialist care and community trust but also risks losing

patients during the referral process (Naik et al., 2015). Another growing area of interest is community-based PrEP delivery, including mobile clinics, pharmacy-based distribution, and services embedded in non-traditional health settings (Hodges-Mameletzi at el., 2020). These approaches have improved reach among underserved populations, especially in Sub-Saharan Africa (Irungu et al., 2021; Venter, 2018).

Importantly, digital and telehealth-based models have gained traction, particularly in response to service disruptions during the COVID-19 pandemic (Liu et al., 2018). Technologies such as mobile apps, SMS follow-ups, and teleconsultations have enabled remote initiation and continuation of PrEP, offering privacy and convenience (Liu et al., 2018).

- **Barriers and facilitators to PrEP integration**

Barriers and facilitators to PrEP integration in healthcare settings reflect a complex interplay of structural, provider, and patient-level factors. On the barrier side, providers report challenges such as insufficient training, limited time during clinical encounters, and uncertainty about prescribing and monitoring protocols, which constrain PrEP uptake (Irie et al., 2024; Khosropour et al., 2025). Stigma and misconceptions about who PrEP is intended for—particularly the assumption that it is only for men who have sex with men—further inhibit adoption, especially in women's healthcare contexts (Khosropour et al., 2025; Goymer et al., 2025). At the structural level, fragmented service delivery and lack of standardized integration across OB/GYN and primary care practices disproportionately limit access for Black and Latinx women in the U.S. South (Irie et al., 2024; Sohail et al., 2025). In contrast, facilitators of integration include embedding PrEP within routine sexual and reproductive health services, task-shifting to nurses or pharmacists, and implementing culturally responsive education to normalize PrEP discussions (Sohail et al., 2025; Goymer et al., 2025). Evidence suggests that streamlined workflows and interdisciplinary collaboration significantly improve provider confidence and reduce patient-level barriers, offering a path toward equitable PrEP delivery (Irie et al., 2024; Sohail et al., 2025).

- **Role of different healthcare professionals**

The effective implementation of Pre-Exposure Prophylaxis (PrEP) in primary healthcare systems demands a coordinated, multidisciplinary approach (Silapaswan, Krokower and Mayer, 2017). Given that PrEP delivery extends beyond simple prescription, involving education, risk screening, adherence monitoring, and psychosocial support, it becomes essential to understand and leverage the roles of varied health professionals particularly nurses, community health workers (CHWs), pharmacists, and doctors (Nakambale et al., 2023).

Nurses

Nurses are critical enablers of decentralized, person-centered PrEP services, particularly in under-resourced settings. Their involvement spans across counselling, risk assessment, laboratory coordination, PrEP initiation (where allowed), and ongoing monitoring (UNAIDS, 2022). Nurse-led PrEP models, especially in Southern Africa, have demonstrated significant success in improving accessibility and reducing service bottlenecks (Butler et al., 2023). Heredia-Rizo, Casuso-Holgado and Martinez-Calderon (2024) found that nurse-led interventions significantly enhanced continuity of PrEP services, especially in rural contexts where doctors were scarce.

Community Health Workers

CHWs play a pivotal role in bridging health systems with hard-to-reach populations. Their proximity to communities enables them to offer culturally appropriate education, dispel myths, reduce stigma, and provide adherence support (Ngcobo et al, 2022). Evidence from implementation project highlights CHWs as instrumental in increasing PrEP initiation rates among adolescents, MSM, and female sex workers. Lanham et al. (2021) emphasize that CHWs, when properly trained, can contribute to overcoming social barriers that often impede PrEP use. Their involvement not only improves trust but enhances retention and follow-up adherence, particularly in mobile populations.

Pharmacists

The role of pharmacists in PrEP delivery has expanded significantly in recent years. In countries like the United States, Australia, and parts of Sub-Saharan Africa, pharmacists are now involved in initiating, dispensing, and monitoring PrEP (Ortblad et al., 2020). Their accessibility makes them valuable assets in decentralizing PrEP services and reaching clients in non-clinical, lower-stigma environments. A study by Sullivan and Siegler, (2018) revealed that pharmacy-based PrEP models resulted in high user satisfaction, especially among individuals who had previously avoided clinic-based care due to stigma or logistical constraints. Moreover, pharmacists can monitor drug interactions and refill compliance, adding a valuable layer of pharmacovigilance.

Doctors

Doctors, particularly general practitioners, play a foundational role in integrating PrEP into holistic health care (Calabrese et al., 2014)**.** Their expertise is essential for initial risk assessment, interpretation of complex medical histories, and managing co-morbidities such as renal dysfunction or hepatitis B. However, relying solely on physician-led models has proven insufficient for large-scale roll-out, especially in low-resource settings. Krakower and Mayer (2016) advocate for a physician-supervised, task-shared model, where doctors provide oversight while empowering other professionals to manage routine aspects of PrEP delivery.

- **Patient perspectives**

Pre-Exposure Prophylaxis (PrEP) has emerged as a highly effective preventive strategy against HIV for individuals at high risk (Grant et al., 2010). Despite its proven efficacy, several factors influence its uptake and continued use among at-risk populations (Krakower and Mayer, 2016). Understanding the patient perspectives within primary health care settings is essential for optimizing PrEP delivery and improving adherence.

Many patients report a strong preference for receiving PrEP through their regular primary care providers, as this enhances confidentiality and reduces the stigma

associated with attending specialized sexual health clinics (Calabrese et al., 2014). Additionally, individuals emphasize the importance of culturally competent and non-judgmental communication from providers, which can significantly influence their willingness to initiate and adhere to PrEP (Karris et al., 2014). However, barriers remain: some patients express concerns that primary care providers may lack the specific knowledge or training to effectively counsel on PrEP, or may not bring up PrEP at all, especially among populations not traditionally perceived as high-risk (Seidman and Weber, 2016). Moreover, systemic issues like time constraints in consultations and fragmented care pathways can limit the integration process. Still, when appropriately implemented, PrEP in primary care offers a pathway to normalize HIV prevention and improve access across diverse populations (Petroll et al., 2017). These findings highlight the need for comprehensive provider education, structural support, and patient-centered models to ensure successful integration.

- **Economic considerations**

The integration of pre-exposure prophylaxis (PrEP) into primary healthcare systems has been widely evaluated for its economic viability in curbing HIV transmission. A foundational study by Grant et al. (2010) demonstrated PrEP's efficacy in reducing HIV acquisition among men who have sex with men (MSM), establishing it as a cornerstone in prevention strategies. Although the direct costs of PrEP including medication, regular HIV testing, and clinical monitoring are nontrivial, particularly in both high-income and low-income settings (Juusola et al., 2012), numerous studies affirm its long-term cost-effectiveness when accounting for savings from averted HIV infections.

In the UK, McCormack et al. (2016) showed that targeting PrEP to high-risk populations was not only effective but also economically justified. Similarly, Venter, (2018) reported that PrEP rollout in South Africa presented a cost-effective strategy, particularly in high-prevalence urban areas. The economic rationale is strengthened by the high lifetime cost of treating HIV, which greatly exceeds the cost of providing PrEP (Killelea et al., 2022). Modeling studies in Sub-Saharan Africa by Phillips et al. (2018) found that substantial reductions in HIV incidence could yield considerable economic benefits at the population level.

Furthermore, analyses by Cambiano et al. (2018) and Nichols et al. (2016) emphasized that even modest uptake of PrEP among priority populations can prevent enough infections to offset its implementation costs. In resource-limited settings, however, issues related to infrastructure, long-term financing, and health system capacity pose implementation challenges (Rwabukwisi et al., 2017; Sohn et al., 2020). Nevertheless, evidence from Irungu et al. (2021) and Nelson et al. (2024) underscores the importance of integrating PrEP within broader primary healthcare frameworks, particularly where HIV prevalence is highest.

The World Health Organization (2015) also endorses the use of PrEP in high-risk groups, noting its role not only in direct prevention but also in easing future healthcare burdens by reducing HIV-related morbidity and associated treatment costs. More recent work, such as that by Hendrickson et al. (2025), highlights how integrating PrEP with routine care improves both accessibility and cost-efficiency.

2.6 SUMMARY

The literature review has indicated that the prevalence of HIV and AIDS globally and in South Africa has come with diverse challenges with particularly the socio-economic outcomes for the families that are affected by it. While medical treatment has been instrumental in improving health and extending the productive lives of those infected thus ameliorating the negative psychological, health, and socio-economic outcomes to families affected, preventive measures are seen to be the most beneficial across multiple platforms at the local, regional, and international levels.

In the next chapter, the research methodology will be described in detail.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter outlines the research design and methodology used in this study. The outline includes a description of the study setting, study design, data collection and analysis methods, and measures to ensure trustworthiness and ethical consideration.

3.2 PURPOSE OF THE STUDY

This study explored the factors that should be considered when integrating HIV PrEP into primary health care services.

3.3 OBJECTIVES OF THE STUDY

The objective of the study includes:

1. Review existing literature on factors to consider for integrating HIV PrEP into primary health care services (Phase 1).
2. Explore and describe the nurses' perceptions of PrEP integration into primary health care services (Phase 2).

3.4 DESCRIPTION OF THE STUDY SETTING

The research setting refers to the place or location in which the study was conducted (Grove, Gray and Burns, 2014). Matlosana Local Municipality is part of Dr Kenneth Kaunda District Municipality in the North West Province. It is situated approximately 164 South West of Johannesburg on the N12 highway. Its strategic objective is to promote forthcoming initiatives from the N12 Treasure Corridor to ensure local economic development and industrialisation. Figure 3.1 depicts the map of Matlosana sourced from the Matlosana IDP Review document (City of Matlosana, 2020/21. IDP). The City of Matlosana comprises Klerksdorp, Jouberton, Alabama, Orkney, Kanana,

Stilfontein, Khuma, Tigane, and Hartbeesfontein and is the largest of all towns in the North West Province. The city has strong physical and socio-economic interactions with Gauteng as well as other main towns like Rustenburg, Potchefstroom, Welkom, Ventersdorp, Wolmaransstad, and Ottosdal (City of Matlosana, 2020/21. IDP).

The area has historically recorded some of the highest HIV prevalence rates in South Africa, mainly due to its location within a mining belt, high population mobility, and socio-economic vulnerabilities that fuel HIV transmission (Shisana et al., 2014; HSRC, 2018). As such, Matlosana is often regarded as representative of the North West Province's HIV burden, highlighting both the challenges of generalized epidemics in peri-urban and mining communities and the opportunities for targeted HIV prevention and treatment interventions (Simbayi et al., 2019).

According to estimates based on the population growth rate of SA Statistics (1.04%) and the Matlosana Socio-Economic Report, the city has a total population of 438,486 people, of whom 103,407 (92%) are urbanised and 35,079 (8%) are rural (Statistics South Africa, 2022). The largest population concentrations are in Jouberton, Kanana, Khuma, and Tigane. The population growth and household growth have declined over time. This can be ascribed to the fact that the local economy has become less dependent on the mining sector, with the tertiary sectors growing in the long term (City of Matlosana, 2020/21. IDP). Mining activities in the city have drastically scaled back since 2001. Nearly 80% of the original workforce was retrenched by 2016 (City of Matlosana, 2020/21. IDP). The decline in mining activities resulted in the number of people living in adverse poverty. The N12 Treasure Route has put Matlosana in the centre of new developments. Developments towards the west of the N12, are comprised of residential development, retail nodes, and mixed land usage. It is the council's strategic objective to promote initiatives from the N12 treasure corridor to ensure local economic development and industrialisation (IDP City of Matlosana, 2020/21).

The City of Matlosana has sixteen clinics, of which four are Community Health Centres, one in each township, operating 24 hours as they have basic doctor's visits, immunizations, health screenings, laboratory and radiology, dental, mental health, reproductive, and maternity services. The study was conducted in four Community

health centres, which are Jouberton CHC situated in Klerksdorp, Botshabelo CHC situated in Stilfontein, Grace Mokhomo CHC in Orkney, and Tigane CHC situated in Hartbeesfontein. The staff compliment consists of PHC nurses, professional nurses, enrolled nurses, assistant nurses, doctors, and data capturers. An estimated headcount of 2500 patients are consulted monthly at each CHC for common ailments, trauma and injuries, chronic disease treatment, family planning, and ante-natal care.

The four selected sites were deemed relevant for this study because they represent diverse service delivery contexts within the 16 health facilities in the sub-district. Site selection was guided by criteria such as HIV burden, patient volume, and service readiness, which are critical when exploring factors for integrating HIV PrEP into primary health care services. By including facilities that differ in size, location (township settings), and capacity, the study ensured a more comprehensive understanding of the practical, structural, and contextual issues that could influence PrEP implementation



Figure 3.1 Overview of the city of Matlosana (2022)

3.5 STUDY DESIGN

According to Creswell and Creswell (2017), study designs are types of inquiry that provide specific direction for procedures in a research study. This study was designed to be a two-phased sequential multi-method design consisting of a scoping review and a qualitative component to explore and describe the perceptions of primary health care nurses about integration of PrEP into primary health care services.

3.5.1 Multi-method study

Creswell and Creswell (2017), define multiple methods as research in which more than one method or more than one worldview is used. It works by choosing from one paradigm or approach but using different methods to analyse the research project. A multi-method approach is suitable where the single method may not answer the entire research question. This study applied two methods, a scoping review and a qualitative component.

3.5.2 Sequential design

This study used a sequential design, which involves building upon findings from one method by using another method to explore further or explain the results (Creswell and Creswell, 2017). A scoping review was conducted before the qualitative method was applied in two separate phases for data collection and analysis. Commencing with a scoping review enabled the researcher to discover what already exists in the literature and identify areas or aspects that should be explored in the qualitative phase.

3.6 PHASE ONE: SCOPING REVIEW

The conduct of literature reviews has increased and evolved with the continual increase in the availability of primary research (Peters et al., 2020). Various forms of evidence and review objectives and questions have led to the development of new approaches designed to synthesize the evidence more effectively and rigorously. Scoping reviews are one type of review (Peters et al., 2020). Colquhoun et al., (2014), describe the scoping review as a form of knowledge synthesis that addresses an

exploratory research question aimed at mapping key concepts, types of evidence, and gaps in research related to a defined area or field by systematically searching, selecting, and synthesizing existing knowledge.

This study identified a scoping literature review as an appropriate method to explore the broader evidence of factors that must be considered for integrating HIV PrEP into primary health care services. The review explored the breadth or extent of the literature, mapped and summarised the evidence, and ultimately disseminated the research findings (Peters et al., 2020). A scoping literature review followed a five-stage framework laid out by Arksey and O'Malley (2015), which was later advanced and described by Levac, Colquhoun, and O'Brien (2010) and the Joanna Briggs Institute (Peters et al., 2020).

Stage one: Identifying the research question

Scoping research questions are broad in nature as the focus is on summarising the breadth of evidence. The research question for the study was: *Which barriers and enabling factors should be considered for integrating HIV PrEP into primary healthcare services?* The question is broad and has the direction, clarity, and focus needed to inform subsequent stages of the research process, such as identifying studies and making decisions about study inclusion. The research question clearly articulates the scope of inquiry, which includes defining the concept, target population, and health outcomes of interest, clarifying the focus of the scoping review and establishing an effective search strategy.

Stage two: Identifying relevant studies

A strength of scoping studies includes the breadth and depth, or comprehensiveness, of the evidence covered. The inclusion criteria detailed the basis on which the sources were considered in the scoping review and were clearly defined. The PCC (Population, Concept, and Context) was used to determine the inclusion criteria (Aromataris & Munn, 2021). The "population" consisted of primary health care nurses; the "concept" was the barriers and enabling factors that should be considered for the integration of HIV PrEP; and the "context" was primary health care services.

Stage three: Study selection

For this scoping review, all peer-reviewed studies published in English between 2012 and 2022 were included. This time frame was selected to capture a comprehensive range of evidence following the U.S. FDA's approval of PrEP in 2012 and to reflect a decade of evolving research and implementation experiences.

- ***Search strategy***

The search strategy was aimed to be as comprehensive as possible to identify both published and unpublished primary research studies. The literature was retrieved from the following databases: PubMed, CINAHL, SCOPUS, MEDLINE, and ProQuest. All studies that focused on the integration of HIV Pre-exposure Prophylaxis were included. The following search words were used: Factors OR enablers OR facilitators OR barriers for HIV PrEP AND integration OR rollout OR uptake OR implementation, AND CHCs OR PHC OR Family clinics. All identified keywords and index terms were adapted for each included database and information source. A three-step search strategy was used in this review. An initial limited search of PubMed and CINAHL, followed by analysis of text words in the title and abstract and index terms was undertaken to identify the articles on the topic. In the second search, the text words contained in the titles and abstracts of relevant studies, and the index terms used to describe the articles were used. The search strategy, including all identified keywords and index terms, was adapted for each database. During the third search, the reference list of all included sources of evidence was screened for additional studies. The results of the search were reported using the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA-ScR) flow diagram (Peters et al., 2020).

Stage four: Charting Data

The data extraction process in scoping review is also referred to as data charting (Peters et al.,2020). This process it logically and descriptively summarises the results that align with the scoping review question and objectives (Peters et al., 2020). The studies that meet the inclusion criteria were included in the extraction (Levac,

Colquhoun and O'Brien, 2010). Data extracted from the large quantity of published research literature reviews included some standard information such as author, country, year of publication, study objectives, design, aims/purpose, population, methodology/methods, findings, recommendations, and limitations. The extracted data was verified independently by the research supervisors. Any disagreements that arose between the reviewers were resolved through discussion with a third reviewer. Two independent reviewers retrieved relevant studies in full and assessed in detail. Any studies excluded at this stage were reported and the reason for exclusion was documented.

Stage five: Collating, summarizing, and reporting the results.

The unique purpose of a scoping review was to aggregate the findings and present an overview rather than a meta-synthesis reporting results on narrowly defined questions (Halas et al., 2015). Firstly, attention was given to the numerical analysis of the articles' extent, nature, and distribution; secondly, the literature was organized according to recommendation types. The results were presented as a map of the data extracted from the articles in a descriptive format that aligns with the objectives and scope of the review. The results were classified under categories such as author, country and year of publication, aim, population, research design, sample, data collection methods and key findings. Aligned with the data matrix

3.6.1 Methodological rigour

A consistent approach to reporting findings was applied. Findings were first reported by summarizing the basic characteristics of all articles included and followed by commentary. The PRISMA ScR including components of equity to accurately report the review search results and analysis summary was used. Two reviewers agreed on the studies to be included. Any disagreements that arose between the reviewers were resolved through discussion with a third reviewer.

3.7 PHASE TWO: QUALITATIVE COMPONENT

The second objective was to explore and describe the nurses' perceptions of HIV PrEP integration into primary health care services (Phase 2).

3.7.1 Study design

In the second phase of the study, a qualitative exploratory descriptive approach was applied. A qualitative paradigm seeks to explore and understand the meaning individuals or groups attribute to a social or human problem (Creswell and Creswell, 2017). The qualitative phase included open-ended questions where participants were allowed to express themselves more fully and yielding new and deeper insights into HIV PrEP integration into primary health care services.

3.7.1.1 Exploratory design

Exploratory design aims to uncover new ideas and insights from the participants who have some familiarity with the integration of HIV pre-exposure prophylaxis into primary health care services (Creswell and Creswell, 2017).

3.7.1.2 Descriptive design

Descriptive design asks participants to share their thoughts and opinions on integration of HIV PrEP into primary health care services, so that the researcher can describe the state of the service with more detail and accuracy (Creswell and Creswell, 2017).

3.7.2 Population and sampling

- Population

The population is all the individuals or objects with common, defining characteristics (Polit and Beck, 2017). In this study population refers to a total sample of all the (N=31) PHC nurses providing a service in the four main CHCs in the Matlosana district of North West Province.

- Sample and Sampling

Sampling is the process of selecting a portion of a population to represent the entire population, whereas a sample is a subset of population elements (Polit and Beck, 2017). Total sampling was used to select and categorize the PHC nurses into two samples: the (N=21) PHC nurses employed by the Matlosana district of Northwest Province and the (N=9) PHC nurses employed by the Aurum Institute placed in the four CHCs for implementation of a vertical HIV PrEP service (Polit and Beck, 2017). The total population was (N=31). However (n=30) consented to participate in the study.

- Inclusion and exclusion criteria

Inclusion and exclusion criteria are used to determine the characteristics of a population eligible and not eligible to participate in the study (Polit and Beck, 2017). The characteristics are predetermined before the study commences.

The inclusion criteria of the study were:

- The primary health care nurses working in community health care centres.
- The PHC nurses' common defining characteristic is the additional clinical skills qualification (Regulation 786, under Nursing Act No, 33 of 2005).
- The PHC nurses who deliver and assists with minor and chronic illness management, treatment of minor ailments, diagnostics, prescription, PrEP administration and advice.

The participants were excluded based on:

1. Being a facility manager
2. Not classified as a professional nurse.

3.7.3 Data Collection

According to Polit and Beck, (2017), data collection is a process of gathering information to address a research question and achieve the study's objectives. A focus

group is an interview with groups of about five to ten people whose opinions and experiences are solicited simultaneously (Polit and Beck, 2017). The advantage of focus group discussion method was that it was efficient and generated a lot of dialogue among the participants (Polit and Beck, 2017). The focus group discussions were conducted, with the total of (n= 30) PHC nurses from the CHCs, and the NGO supporting the facility in the provision of HIV Prevention services. There were four FGDs and there were 6, 7,8 and 9 participants respectively in each group.

3.7.3.1 The data collection instrument

The research instrument refers to devices used to collect data, such as questionnaires, tests, structured interview schedules, and checklists (Seaman, 2008). A semi-structured interview guide with one central question and a few open-ended research questions was designed and adopted for the data collection in this study (Appendix H). The main question asked to the participants was, “Please tell me what integration of HIV PrEP into primary health care services means to you?” This was followed by some probing questions that explored PHC nurses’ perceptions of the factors that should be considered for integrating HIV PrEP into Community Health Services in Matlosana. Focus group discussions were conducted separately for each group using the same interview guide, which consisted of the main questions and probes. The demographic data of participants was collected before the discussions commence.

3.7.3.2 Data collection process

Recruitment strategy

The choice of total sampling was influenced by the need to recruit a few knowledgeable participants engaged in nursing, particularly working independently. About 21 PHC nurses were recruited from four identified CHCs and 9 NGO nurses. However, not all consented to participate in the study. The participants were recruited in a meeting scheduled at their respective clinics with the assistance of the facility managers. The participants were briefed about all the approvals received to conduct the study and therefore provided with study information (Appendix E) to enable them to make an informed decision on whether to join the study or not; they were then requested to sign an informed consent form (Appendix F) before the FGD

commenced. All participants consented to be voice recorded. Focus group discussions were held at respective CHC's where participants work because it was convenient for all participants. The interviews were aimed to last approximately forty-five minutes to an hour for each group. The small sample size enabled the researcher to engage with the participants before the interviews, effectively creating an open environment for communication and exchanging ideas. It yielded the needed depth of information for the study.

The data collection process was undertaken through audio recording of focus group discussions. The moderator guided the discussions according to the topic. The audio-recorded interviews were then transcribed to provide the qualitative data. The researcher also took field notes. The English language was used to ensure flexibility and remove language limitations in the dialogues, as all participants were comfortable communicating their ideas and responses in English. Participants were first informed about the purpose of the study and were allowed to ask questions. The study aimed to obtain rich, deep qualitative data supported by a thorough review of literature that informed the data analysis. This was essential since a significant trade-off was made between the depth of information and sample size, thus essentially restricting participation to a few highly knowledgeable and experienced primary health care nurses within the community health care centres. The time allotted for the discussions was sufficient to ensure that the dialogues were comprehensive, allowing for the exchange of more information between the participants and the interviewer. Interviews carried on until data saturation, whereby no new information emerges, and the interview sounds redundant (Polit and Beck, 2017). The data saturation was reached in each focus group when there was no new information emerging.

3.7.4 Data Analysis

Data analysis is the systematic organization and synthesis of research data to understand the factors that should be considered for integrating HIV PrEP into PHC services (Polit and Beck, 2017). Data collection and analysis of the interviews were done concurrently in this phase (Creswell and Creswell, 2017). After each interview, the researcher followed the qualitative data analysis process to understand the participants' views and identify information that should be probed further in future

interviews. The study used thematic analysis, which was relevant in analysing nurses' perceptions obtained through the focus group discussions (Polit and Beck, 2017).
The six phases followed in Braun and Clarke (2021) thematic analysis are outlined below:

- **Familiarisation with data**

Data analysis commenced with repeatedly listening to the audio recordings and verbatim transcription of each interview recording from the audio recordings of the focus groups done separately word for word.

The first step of data analysis involves immersing yourself in the data by reading textual data from transcripts and listening to audio recordings (Braun & Clarke, 2021). Notes were taken as the researcher listened to the audio recordings to highlight items that were potentially of interest. Note-making at this step is more observational and casual than systematic and inclusive. The data is not coded yet. Notes are typically a stream of consciousness, a messy rush of ideas. These notes were written solely to aid in the analysis process.

- **Generating Initial Codes**

Based on Braun and Clarke (2021), the second step began with systematically analysing the data through coding. Codes are the building blocks of analysis. Theoretical coding is the method by which the qualitative data is segmented and categorised for thematic analysis. In this coding process, the analysis began with anticipated or known themes in the data. Codes were identified, providing a label for a data feature potentially relevant to the research question. Coding requires another thorough read of every data item. Each data item was coded in its entirety before coding another. Whenever something potentially relevant to the research question is identified, a code is allocated.

- **Searching for Themes**

In this step, the analysis starts taking shape as there is a shift from codes to themes. A theme captures something important about the data in relation to the research question and represents some level of patterned response or meaning within the data set (Braun and Clarke, 2021) The thematic analysis coding was implemented in the analysis of data in this study in a two-stage process, at each stage the researcher increased their familiarity and engagement with the data. Initially, broadly defining the receptacle themes and then a rigorous analysis of categorised data. This enabled the researcher to achieve thematic elaboration, that is, further analysis of the data in the categories, employing further data reduction and coding using comparative analysis in which themes were deepened, reconstituted, or discarded. During this process, the researcher also effectively used memoing, where the various reasons codes were changed or reconstituted were recorded to ensure that the resulting material is substantive to the detailed description of the phenomenon under consideration. Memoing took the form of describing the initial categories and their contents since second-stage coding, essentially entailed decontextualising data from the original interview and contextualising it into a theme, which then formed the basis of reporting in the presentation of the findings.

- **Reviewing Potential Themes**

This stage involves a recursive process whereby the developing themes are reviewed in relation to the coded data and the entire data set (Braun and Clarke, 2021). It is during this stage that quality is essentially checked. The first step is to check themes against the collated extracts of data to explore whether the theme works in relation to the data. Some codes may be discarded or relocated under another theme if they do not fit into the data or alternatively the boundaries of themes may be broadened so that it meaningfully captures the relevant data.

The second stage commence once a distinctive and coherent set of themes that aligns with the coded data extracts is achieved which is reviewing the themes in relation to the entire data set. It involves one final reread of all the entire data to capture the entire

data set or an aspect thereof. Aiming for a set of themes that capture the most important and relevant elements of the data and the overall tone of the data, in relation to the research question.

- **Defining and Naming Themes**

This phase involves the crucial shaping up of analysis into its fine-grained detail (Braun and Clarke, 2021). It also involves selecting extracts to present and analyse and then setting out the story of each theme with or around these extracts. The extracts selected to quote and analyse provide the structure for analysis. The data narrative informing the reader of the interpretation of the data and their meaning. The analytic narrative needs to tell the reader what about an extract is interesting. The other aspect of this stage is working out what to call each theme. The decision on name for a theme should be informative and concise. Furthermore, a theme should have a singular focus, related and directly address the research question.

- **Producing the Report**

Writing and analysis are thoroughly interwoven in qualitative research. From informal writing of notes and memos to the more formal processes of analysis and memos to the more formal processes of analysis and report writing (Braun and Clarke, 2021). The purpose of the report is to provide a compelling story about data based on the analysis. The initial data analysis was conducted by the researcher. The two supervisors independently went through the transcripts and the data analysis process. A consensus meeting was held with the researcher to ensure the findings were accurate and not preconceived.

3.7.5 Measures of Trustworthiness

To ensure rigour, the study was guided by Lincoln-Guba's framework for establishing trustworthiness in qualitative research which encompasses credibility, dependability, transferability, confirmability, and authenticity (Polit & Beck, 2017). These elements underpin the validity and rigor of qualitative research findings.

- **Credibility**

Credibility refers to the confidence in the truthfulness of the data and the interpretations derived from it (Polit & Beck, 2017). In this study, credibility was ensured through the application of thematic analysis during the data interpretation process. This method was used to explore the perceptions of primary health care nurses, to uncover patterns of meaning. Thematic analysis was conducted inductively, as is appropriate for exploring subjective experiences, with interview data serving as the primary source. The identified themes were firmly grounded in the participants' narratives and emerged organically from the data. Furthermore, by continuously revisiting and reconnecting the themes to their original contextual meanings, the analysis ensured that the final thematic constructs were authentic reflections of the participants' perceptions.

- **Dependability**

Dependability refers to the stability and consistency of data over time and under varying conditions (Polit & Beck, 2017). In this study, dependability was addressed by providing a comprehensive description of the data collection and analysis procedures, ensuring methodological transparency. By clearly outlining each step of the research process, the study enables future researchers to replicate the approach, even if the findings may differ due to context.

- **Transferability**

Transferability refers to the extent to which the findings of a study can be applied or transferred to other contexts or settings (Polit and Beck, 2017). In this study, although the sample size was small, the use of focus group discussion allowed for the generation of rich, detailed descriptions of the perceptions of primary health care nurses. This thick description enabled a deeper understanding of the participants' perceptions and made it possible to identify variations in individual experiences, even among nurses responding to similar variables. By presenting these nuanced accounts, the study enhances the potential for transferability of the findings to similar primary

health care contexts where comparable roles, challenges, and operational conditions exist.

- **Confirmability**

Confirmability relates to the accuracy, relevance, and objectivity of the data and the extent to which the study's findings can be shown to stem directly from the participants' responses rather than researcher bias (Polit and Beck, 2017). In this study, confirmability was established through audio-recording the focus group discussions and securely storing both the recordings and the verbatim transcripts. During data analysis, the researcher ensured that the codes and emerging themes were consistently traced back to the original transcript content, preserving the contextual integrity of participants' contributions. Additionally, the integration of theoretical frameworks and established constructs during interpretation helped anchor the analysis in a scholarly context, reducing subjective influence. These measures collectively enhance the transparency and auditability of the research process, thereby supporting the objectivity and trustworthiness of the findings.

- **Authenticity**

Authenticity refers to the extent to which the researcher fairly and genuinely represents the diverse realities and perspectives of participants (Polit and Beck, 2017). In this study, authenticity was achieved by recognizing and valuing each participant's input as a unique expression of their perceptions, particularly in relation to decision-making processes within their routine clinical practice. By presenting these individual voices with equal weight and contextual clarity, the study ensured that the findings reflected a faithful portrayal of the varied experiences among primary health care nurses.

3.8 ETHICAL CONSIDERATIONS

Ethical consideration refers to the system of moral values that is concerned with the degree to which the research procedure adheres to professional, legal, and social

obligations to the study participants (Polit and Beck, 2017). The essential purpose of ethics is to protect the welfare and the rights of the research participants.

3.8.1 Institutional Permission

The approval to conduct the study was received from the University of Witwatersrand's Research and Postgraduate Committee (Appendix A) and Ethical clearance (Appendix B) was obtained from the Human Research Ethics Committee (Medical) of the University of the Witwatersrand. Permission to recruit and collect data from Community Healthcare Centres was obtained from the North West Provincial Ethics Committee (Appendix C) and the Matlosana Sub-district Health Department (Appendix D).

3.8.2 Participants

Once institutional permission was received, the prospective participants were accessed through the assistance of the CHC facility managers to participate in the study. The following ethical obligations were ensured.

- **Informed consent**

In this study, the participants signed an informed consent form to participate, which outlined the conditions of their participation, its voluntary nature and the exercise of their right to withdraw from the study at any time. Participants were provided adequate information about all aspects of the study and ample time to decide whether they want to take part in the study. The informed consent form and process were in English which was a language of choice for the participants.

- **Confidentiality and Anonymity**

The participants were assured that their identifying information, such as names and the institution they work at would not be included in the study report and that pseudonyms would be used instead. In the analysis of the data and reporting of

findings, the interviewees were referenced by number, with the focus of the analysis being the information that was contained in the interview transcripts. The audio recordings and the transcripts are all safely stored in a password protected computer accessible only to the primary researcher. All materials will be deleted five years from the date of publication of the research.

- **Voluntarism**

The researcher exercised openness, honesty, and transparency about the voluntary nature of participation in the study. The participants were neither promised any reward for their participation nor threatened for their refusal to participate thereof. Participants were informed about their right to withdraw from the study participation at any time.

3.9 SUMMARY

This chapter presented the study setting and the research methodology that was implemented to answer the research question. It also discussed the research design and how it was operationalised in the study. The data collection and data analysis aspects were explained in a detailed manner. Measures of trustworthiness and ethical considerations were included.

The next chapter present findings and discussion of a scoping review literature study on factors to consider for integrating HIV PrEP into primary health care services.

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF SCOPING REVIEW FINDINGS

4.1 INTRODUCTION

This chapter presents the findings from Phase One of the study, which is a scoping review, guided by a specific review question. It begins with a brief description of the scoping review approach, followed by the outcomes, which are illustrated using the PRISMA-ScR diagram. The chapter also presents the inclusion and exclusion criteria, information sources and the search strategy, selection of studies, data extraction, and data synthesis. The chapter presents the findings that emerged from the scoping review and ends with a summary of the key findings that emerged from the review, discussions of the review findings, and a summary of the chapter.

4.2 IDENTIFYING THE RESEARCH QUESTION

Arksey and O'Malley (2015) and Levac, Colquhoun and O' brien, (2010) state that the research question is one of the first things to be identified and must be linked with the purpose of the study. The scoping review explored the question, "*Which barriers and factors should be considered for the integration of HIV PrEP into primary health care services?"*

4.3 IDENTIFYING RELEVANT STUDIES

The Population-Concept-Context (PCC) inclusion criteria (Table 4-1) described in the Joanna Briggs Institute (JBI) manual for scoping reviews (Peters et al., 2020) were used to guide the identification of relevant studies. These provide a guide on which to base the decision about the sources to be included in the review (Peters et al., 2020). The duration of the review was informed by the approval of the HIV PrEP by the FDA in 2012 to be used as part of HIV preventive measures in human beings.

Table 4.1 Inclusion and exclusion criteria

INCLUSION CRITERIA	
Population	Primary health care nurses
Concept	Barriers and enabling factors that should be considered for the integration of HIV PrEP
Context	Primary health care services
Types of evidence source	All peer-reviewed studies Studies published in English Date: January 2012 – December 2022
EXCLUSION CRITERIA	
• Studies published in other languages except English • Reviews	

4.3.1 Search strategy

The three-step search strategy recommended for scoping review in the JBI Manual (Peters et al., 2020) was employed. The databases were selected for their comprehensiveness and covered a wide range of medical and nursing journals, as well as biomedical literature (Polit & Beck, 2017).

The first step, an initial and limited search was conducted on one database, PubMed, to familiarise myself with the terminology and to refine search words. This narrow search yielded 47 studies, with the search limited to English-language full-text articles and the time frame of 2012 to 2022. The search string included keywords such as factors, enablers, facilitators, barriers, HIV PrEP, integration, rollout, uptake, implementation, community health centres, primary health care, and family clinics to broaden the literature search. In the second step, the retrieved studies were analysed of the text words contained in their titles and abstracts and the index terms used to describe studies (Peters et al.,2020). This analysis provided important keywords and index terms to expand the search to other databases, which are CINAHL Complete, SCOPUS, MEDLINE, and ProQuest. Table 3-1 below shows the number of retrieved studies relevant to the search topic from all databases. During the final step, the reference list of identified studies was screened to further search for more related studies.

Table 4-2 Number of studies listed from databases.

DATABASES	SEARCH OPTIONS	NUMBER
PubMed	((((((((((Factors) OR (enablers)) OR (facilitators))) OR (barriers for HIV Pre-exposure prophylaxis)) AND (integration)) OR (rollout)) OR (uptake)) OR (implementation)) AND (community health centre)) OR (primary health care)) OR (family clinics)	47
CINAHL Ultimate	factors OR enablers OR facilitators AND barriers for HIV pre-exposure prophylaxis AND integration OR rollout OR uptake OR implementation in primary health care services OR community health centres OR family clinics Search modes – Boolen/Phrase Expanders – Apply equivalent subjects Limiters – Full text Publication – 20120101-20231231	20
SCOPUS	((Factors)) OR ((enablers)) OR ((facilitators)) OR ((barriers for HIV Pre Exposure Prophylaxis)) AND ((integration)) OR ((rollout)) OR ((uptake)) OR ((implementation)) AND ((Community health centre)) OR ((primary health care)) OR ((family clinic))) AND PUBYEAR > 2016 AND PUBYEAR < 2023	94
Proquest	Factors OR enablers OR facilitators AND (barriers for HIV PrEP) AND integration OR rollout OR uptake OR implementation AND (community health centres) OR (Primary Health Care) Additional limits – 01 January 2012 to 31 December 2022	100
Other sources		24
Total studies		285
Total excluding duplicates		199

4.4 STUDY SELECTION

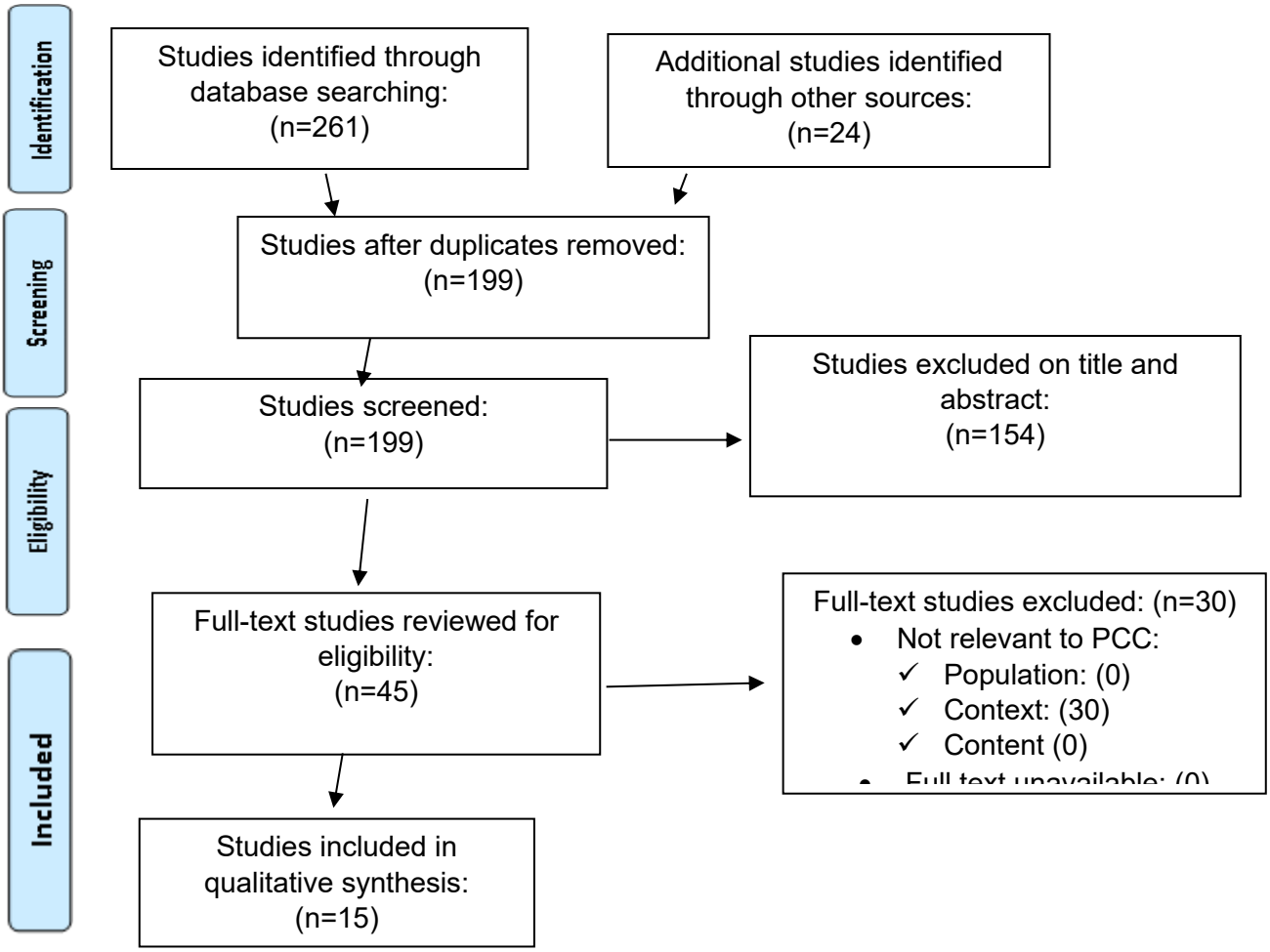
4.4.1 Selection process

All identified studies were imported into the reference manager software (Zotero) and duplicates were removed. In the first stage, the titles, and abstracts of the identified studies were reviewed independently by two reviewers (OJ and NK). The process was guided by the inclusion criteria (PCC), and all studies that did not meet the criterion were excluded. Studies deemed potentially relevant proceeded to full-text review (OJ & NK). A third reviewer (AT) validated the selection process, resolving any discrepancies. Subsequently, the reference lists of included studies were examined for additional sources. The entire selection process is illustrated in the PRISMA-ScR diagram (Figure 4-1)

4.4.2 Study selection results

Several studies on factors to be considered for integration of HIV Pre-exposure prophylaxis into primary health care services were identified during the literature search. The initial database search yielded 261 studies, supplemented by 24 from other sources. A total of 199 studies remained after the removal of 89 duplicates. Title and abstract screening resulted in the exclusion of 154 studies, leaving 45 for full-text review. Two reviewers (OJ and NK) independently assessed these 45 studies for eligibility, with the third reviewer (AT) resolving disagreements and validating the final selection. Reasons for exclusion included irrelevant context (30). Ultimately, 15 studies were included in this review. The complete screening process and reasons for exclusion are detailed in the PRISMA flow diagram (Figure 4-1).

Figure 4-1 PRISMA ScR



4.5 Charting the data

Key information from the selected studies relevant to the review question were mapped out using headings such as the author, year, country, research design, sample, data collection methods and key findings. This information is summarized in the data matrix (Table 4-3).

4.6 Collating, summarising, and reporting the results

This scoping review did not synthesise the results of the included studies, but it descriptively mapped them. The extracted data was analysed as follows according to geographical location, year of publication, approach and focus of the study and lastly the factors (barriers and facilitators) considered for integrating HIV PrEP into primary health care services. These factors were further categorized provider and client level facilitators and barriers.

Table 4-3 Data matrix

	Author, year & country	Aim	Research Design / Sample/ Data collection methods	Key findings
1	Rayanakom et al., 2022. Thailand	To examine PrEP service providers' knowledge of and attitudes towards PrEP service.	Cross-sectional survey N=199 respondents HCPs from the hospital (N=158) and 38 from Key Population Led Health Services (KPLHS)	Differences in PrEP knowledge between hospital-based providers (less knowledgeable) and those in KPLHS. Stigma related to PrEP use among HCPs. Service integration between both settings, more involvement and distribution of KPLHS in reaching key populations would be essential in optimizing PrEP uptake and retention. Ongoing education to improve PrEP knowledge and address attitudinal barriers and reduce stigma associated with PrEP among both HCPs and communities
2	Razon et al., 2021 United States	To explore barriers and facilitators to PrEP provision in U.S. Family planning clinics.	Qualitative FGDs. 6 FGDs (N = 37) Clinicians, counsellors & clinic managers. Family clinics in San Fransisco, California; Kansas City; Missouri; and Philadelphia, Pennsylvania.	HCPs expressed concerns that PrEP integration could disrupt existing clinic workflows and priorities. A significant barrier was HCP discomfort in addressing the social and structural factors that contribute to HIV risk. Limited resources, including time, staffing, and physical space, were identified as a challenge to implementing PrEP services effectively. Streamlining PrEP service delivery within the existing primary care workflow is needed and adequate training and ongoing support for HCPs to ensure they are comfortable and competent in providing PrEP services. Adequate resources must be allocated to support PrEP provision.
3	Doan et al., 2022 Vietnam	To ascertain barriers to PrEP uptake among transgender women and determine priority actions for quality improvement.	Continuous quality improvement – Plan-Do-Study-Act (PDSA) cycles	A shift towards patient-centered, gender-affirming care that addresses the unique needs of transgender population is required. Inconsistent availability of PrEP medication

			Routine programmatic data analysis Descriptive cross-sectional study.	Thorough training on transgender health, PrEP interactions and respectful communication should be provided to HCPs
4	Rousseau et al., 2021 South Africa	To develop scalable and context-specific PrEP delivery strategies for AGYW in Africa	Qualitative IDIs and FGDs. (N = 2550) AGYW enrolled Kisumu in Kenya and Johannesburg and Cape Town in South Africa	The study noted that stigma related to HIV and sexual activity and fear of judgement from peers and HCPs are key barriers to PrEP access and adherence. Creation of youth-friendly healthcare environment and provision of comprehensive support services are crucial for the integration of PrEP into existing health services.
5	Irungu et al., 2021 Kenya	To evaluate the effectiveness of PrEP implementation and integration in public HIV care clinics	Stepped-wedge cluster-randomised pragmatic trial. N = 25 Public HIV care Clinics	Adapting clinic procedures and provision of comprehensive training on PrEP delivery and counselling are critical for efficient integration of PrEP. Ensuring a consistent supply of PrEP medication and engaging with communities to increase PrEP awareness is essential for PrEP integration.
6	Roche et al., 2022 Kenya	To evaluate the implementation of integrated PrEP-FP services at two FP clinics in Kenya	Qualitative study. N = 1000 participants Kisumu, Kenya	The study highlighted stigma and discrimination surrounding HIV and sexual activity as a major obstacle in seeking PrEP and related services. Lack of youth-friendly services in primary healthcare facilities and insufficient training of health care providers are identified as barriers to integration of PrEP. Involving communities in the design and implementation of PrEP services and providing healthcare providers with comprehensive training can enhance uptake and adherence of PrEP.
7	Mansoor et al.,2019 South Africa	To assess the feasibility, acceptability, and effectiveness of	Two-arm, open-label, randomised controlled, non-inferiority trial.	Training of HCPs on PrEP, intensive counselling and support are identified as barriers. Stigma related to HIV and sexual activity and consistent

		integrating topical PrEP provision into routine FP services	N = 382 KwaZulu-Natal, South Africa	supply PrEP medication were highlighted as stumbling blocks to integration of PrEP. Integrating PrEP into existing family planning services and provision of comprehensive counselling can aid the successful integration of PrEP.
8	Jackson-Gibson et al., 2021 Kenya	To explore facilitators and barriers to PrEP implementation and assess factors affecting the initiation and persistence of PrEP among adolescent girls and young women.	Qualitative study. N = 55 participants Kisumu, Kenya	Social stigma, fear of disclosure to family members and peers and insufficient knowledge about PrEP and its benefits is stumbling block for uptake of PrEP. The study also highlighted the lack of partner support and inconsistent PrEP availability as a barrier to PrEP integration. The use of the safe space model, decentralization of PrEP support and delivery, peer mentors, effective linkage to local care facilities, the sensitization of parents and male sexual partners, disclosure of PrEP use by beneficiaries, active stakeholder involvement, and community engagement were among facilitators to PrEP uptake. Community outreach and education programmes to increase awareness and access and peer support and mentorship programs are critical for integration of PrEP.
9	Mugwanya et al., 2019 Kenya	To demonstrate the feasibility of integrating PrEP delivery within routine family planning clinics to serve as a platform to efficiently reach at-risk adolescent girls and young women for	Pilot study N = 1271 participants in 8 clinics in Kisumu Country, Kenya	Awareness of PrEP and individuals' perceived risk for HIV are important drivers of PrEP initiation and continuation. Provision of adequate training for staff and addressing potential workload increases is crucial to ensure effective provision of PrEP services. Adequate resource allocation, including funding, staff, and supplies to support PrEP integration is needed.

		PrEP in HIV high-burden settings		
10	Mah. 2022 Kenya	To assess key influences on the feasibility and acceptability of early integration of PrEP delivery in FP clinics from the perspective of healthcare providers and to identify recommendations for improving the integration of PrEP into FP clinics	Qualitative evaluation Providers from 12 FP clinics in Kisumu County	Insufficient training and knowledge of HCPs, workload and time constraints were highlighted as barriers for PrEP integration. Some HCPs expressed lack of confidence in their ability to deliver PrEP services effectively and concerns about workflow disruption in clinics. Implementation of standardised and ongoing training programs for HCPs on PrEP delivery and strategies to address stigma are essential for effective integration.
11	Van Heerden et al., 2022 South Africa	To bridge the divide between science and practice by exploring health care providers' views on what is needed to implement new HIV programs within existing HIV care	Qualitative 20 IDI and 5 key informant interviews in uMgungundlovu district, KwaZulu Natal.	HCPs cited the long waiting time, overcrowding at clinics, poor record-keeping and follow up systems and inconsistent availability of medications posed as stumbling blocks for integration. Addressing health care system inefficiencies, such as long wait time and combating stigma and discrimination is crucial for successful PrEP implementation.
12	Gregg et al., 2020 USA	To identify barriers to PrEP implementation and create interventions to improve access to PrEP in primary care clinic for homeless veterans	Pilot quality improvement initiative Focus group of 23 clinic staff and trainees	Homeless veterans are facing a significant social determinant of health, including housing instability, substance use, and mental health conditions which create unique barriers to PrEP adherence. Provision of intensive case management and support services to assist with PrEP adherence and engagement in care is essential.

13	Wilson et al., 2021 USA	To advance the understanding of communication processes across a variety of health contexts by emphasising the multilevel challenges that intersect within provider-patient PrEP communication.	Qualitative study N=20 semi-structured interviews	Primary health care identified a lack sufficient knowledge about PrEP and PrEP eligibility as a barrier. HCPs reported time constraints as a challenge and also a broad sense of discomfort in engagement in patient-centered PrEP discussions. Developing and implementing standardised training programs for HCPs and ongoing education and updates will facilitate PrEP uptake.
14	Sullivan and Siegler., 2018 USA	To identify and analyse the opportunities for effectively expanding PrEP access and uptake within diverse populations and examine challenges that hinder the successful implementation of PrEP programs.	Qualitative study	Access to PrEP, stigma and discrimination deter individuals from seeking PrEP. Limited laboratory capacity hinders integration. To get PrEP to those who need it, it requires an increase in access to PrEP, national policies supportive of access to healthcare for those in most need and new partnerships.
15	Rousseau et al., 2021 South Africa	To explore the feasibility and acceptability of providing PrEP to AGYW via a community-based mobile clinic known as the Tutu Teen Truck in Cape Town, South Africa	Qualitative sub-study N = 30 young women	Young women expressed that because the TTT operates at times convenient for them later in the day and the visits are short, it gives them time to still complete their homework and chores. The biometric medical record system allows for privacy as well as readily accessible client information, overcoming challenges with missing files or difficulty with re-entry when a client has not accessed services recently.

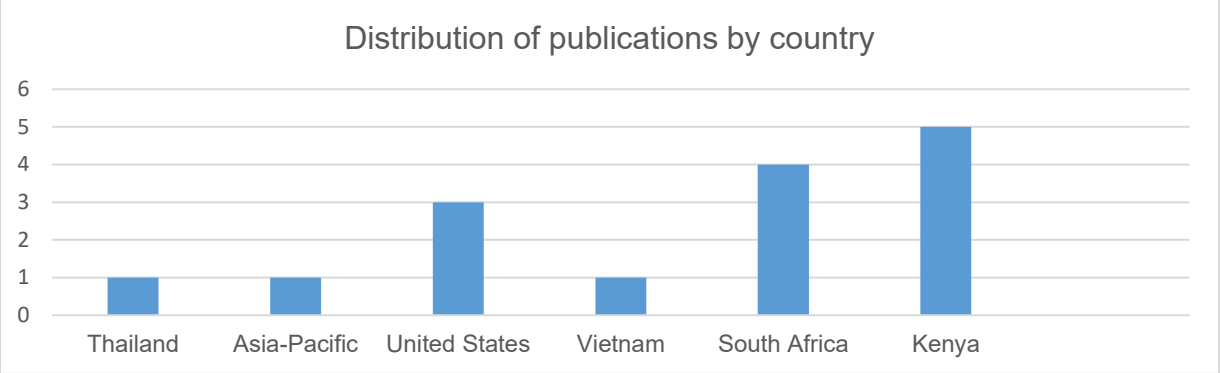
Keywords: Healthcare providers= HCPs Focus group discussion= FGD Family planning=FP In-depth interview=IDI
Adolescent girls and young women=AGYW

4.7 Characteristics of the included studies

4.7.1 Study distribution by geographical location

This review considered the integration of HIV PrEP into primary health care services and its associated barriers and facilitators globally. The studies included in the review presented data from three continents representing six countries. The leading continent was Africa with 9 studies (South Africa= 4 and Kenya = 5); followed by Asia with 3 studies (Thailand = 1, Vietnam=1 and Asia-Pacific = 1) and lastly North America with 3 studies from the United States of America. Figure 4-2 summarizes this information.

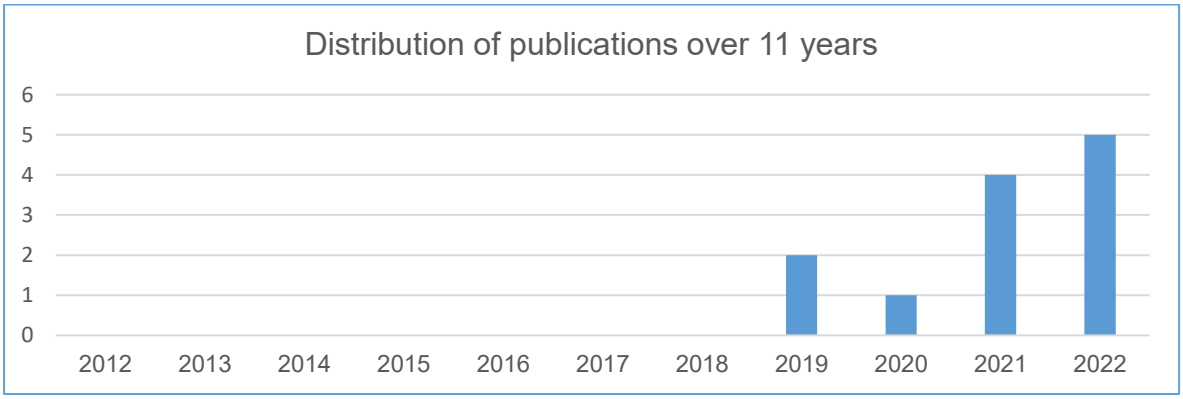
Figure 4- 2



4.7.2 Study distribution by year of publication

The included studies covered a period of 11 years, starting from 2012 to 2022. Most studies relating to the integration of HIV PrEP into primary health care services were published in 2021 and 2022, as shown in Figure 4-3 below.

Figure 4- 3



4.7.3 Approach and focus of reviewed studies

The quantitative approach was used in 60% (n=9) of the studies, whereas 7% (n=1) of studies used a pilot-open label implementation program, 15% (n=2) of studies used randomised controlled trials. These studies focused on exploring various aspects of integrating HIV PrEP into primary health care services. Several facilitators and barriers to the integration of PrEP into primary health care services and the advantages thereof were considered.

4.8 THEMES DERIVED FROM THE STUDIES

The objective of this scoping review was to map the literature on factors that should be considered for integrating HIV PrEP into primary health care services. Fifteen studies were considered, and two categories were identified which are the provider-level category and client-level and seven themes aligned to the category. The identified facilitators and barriers to integrating HIV PrEP into primary health care services were grouped according to the themes. Table 4.4 below provides an overview of the two categories, eleven themes, fourteen facilitators and twenty-nine barriers.

Table 4-4 Overview of categories, themes, facilitators and barriers

Provider-level category			
Theme	Facilitators	Theme	Barriers
1. Training and capacity building	Prep training	1.Structured/Resource limitations	Limited resources
	Standardised training programs		Limited laboratory capacity
2. System and structural support	Supportive environments		Inadequate facilities for routine screening and medication monitoring
	Consistent supply of PrEP medication		Inconsistent availability of PrEP medication
	Adequate resource allocation		Limited number of qualified health care workers
3. Communication	Integration of patient/provider conversation		
	Offering gender-competent, integrated primary health care	2.Provider knowledge and attitude	Insufficient PrEP training and knowledge
	Person-centered prevention conversation		Lack of confidence
			Stigma related to PrEP use among HCPs
	Stakeholder involvement and community engagement		Discomfort addressing social and structural factors contributing to HIV risk
		3.Workload and systemic issues	Workload constraints
4. System-level strategies	Linkage to local care facilities		Challenges integrating PrEP services into existing workflows
	Decentralization of PrEP support and delivery		Institutional limitations for prescribing PrEP
	Use of safe space models		Discomfort in addressing social and structural factors
	Addressing stigma and discrimination		Long waiting times and overcrowding at clinics
			Poor record-keeping and follow-up systems
Client-level category			
5. Knowledge and awareness	Knowledge of PrEP		Stigma related to HIV and sexual activity

	Individuals' perceived risk of HIV	4. Stigma and social factors	Social stigma, fear of disclosure to family members and peers
6. Structural facilitators	Supportive environment		Fear of judgement from peers and HCPs
	Timely access to PrEP services		Lack of support
	Easy access to client information		Lack of partner support
	Youth-friendly health care environment		Difficult fitting pill-taking into lifestyle
7. Social facilitators	Acceptance of PrEP within communities	5. Knowledge and awareness	Insufficient knowledge about PrEP and its benefits
	Disclosure of PrEP use	6. Individual and perceived barriers	Concerns about side effects of medication
	Community outreach and education programs		Perceived benefits
	Peer support and mentorship programs		Clear communication
			Frequent relocation
		7. Access and structural barriers	Limited resource availability
			Addressing health care system inefficiency
			Homelessness and associated social determinants of health

4.8.1 PROVIDER-LEVEL FACILITATORS

Provider-level facilitators refer to elements that positively influence the implementation, adoption, and effective delivery of health interventions. These include the provider's knowledge, System and structural support, communication competencies, system – level strategies (Katz et al., 2019; Krakower and Mayer, 2016). In the context of this review, the identified provider-level facilitators were categorized into four main themes: (1) training and capacity development, (2) structural and system-level support, (3) provider-patient communication, and (4) implementation strategies embedded within healthcare systems. Each of these facilitators is examined in detail in the following sections.

4.8.1.1 Training and capacity building

Extensive evidence from various national healthcare systems underscores the fundamental importance of comprehensive, standardized training for healthcare providers in the effective delivery of pre-exposure prophylaxis (PrEP). Such training enhances providers' knowledge, clinical decision-making capacity, and confidence in offering PrEP services (Razon et al., 2021; Mugwanya et al., 2019; Mah, 2022; Blumenthal et al., 2015; Krakower et al., 2014).

In high-income settings like the USA and Canada, structured educational initiatives and professional development programs have been shown to significantly improve PrEP uptake and reduce provider hesitancy, particularly when training includes components on risk assessment, stigma reduction, and patient-centered communication (Blumenthal et al., 2015; Krakower et al., 2014; Karris et al., 2014). Similarly, Wilson et al. (2021) emphasize that integrating gender-affirming and culturally competent approaches into training is particularly impactful for transgender-inclusive care models in urban centers like San Francisco.

In contrast, studies from Sub-Saharan Africa, including Kenya and South Africa, reveal that task-shifting strategies, on-site mentorship, and integration of PrEP training into existing health infrastructure are crucial for provider empowerment, especially where

workforce shortages persist (Mugwanya et al., 2019; Van Heerden et al., 2022; Irungu et al., 2021). Continuous professional development remains equally critical in these settings to ensure providers remain updated on evolving PrEP guidelines and protocols. Mah (2022) further argues that in low-resource settings, decentralized, modular training formats delivered through digital platforms may enhance accessibility and scalability.

Overall, ongoing training not only builds initial provider capacity but also supports long-term service quality by addressing persistent knowledge gaps, correcting misconceptions, and reinforcing adherence to global and country-specific PrEP delivery standards.

4.8.1.2 System and structural support

Creating enabling clinical environments and ensuring timely, equitable access to pre-exposure prophylaxis (PrEP) services are essential to the effective integration of PrEP into standard healthcare systems. Across diverse settings, a supportive work culture characterized by strong leadership, interprofessional collaboration, and the reduction of bureaucratic and structural barriers has been repeatedly identified as a key enabler of successful PrEP rollout (Razon et al., 2021; Karris et al., 2014; Patel et al., 2020). In high-income countries such as the USA, institutional policies that foster clear clinical guidelines, incentivize teamwork, and promote inclusive service delivery have demonstrated improved PrEP engagement and provider satisfaction (Patel et al., 2020; Ridgway et al., 2018).

Comparatively, in low- and middle-income countries like Kenya, Uganda, and South Africa, provider experiences reveal that structural challenges including long patient wait times, irregular PrEP stockouts, inadequate human resources, and limited infrastructure remain substantial impediments to effective service delivery (Van Heerden et al., 2022; Irungu et al., 2021; Mugwanya et al., 2019). Grimsrud et al. (2020) highlight that differentiated service delivery models, such as task-shifting and decentralized care, offer context-sensitive solutions in resource-constrained environments. Moreover, cross-

country comparisons show that while systemic inefficiencies are universally relevant, their impact is often more pronounced in settings where health systems are underfunded and overburdened.

Strategically addressing these operational barriers through investment in infrastructure, consistent supply chains, adequate staffing, and integration of PrEP into broader health programs is vital to expanding access, improving provider efficacy, and achieving long-term sustainability in PrEP scale-up efforts globally.

4.8.1.3 Communication

A growing body of international research underscores the significance of incorporating both social and individual-level determinants into routine healthcare interactions to enhance patient-centered outcomes. For instance, Razon et al. (2021), in a USA based study, advocate for the integration of discussions around structural barriers such as poverty, stigma, and gender inequality within clinical settings, particularly in community health centers serving marginalized populations. Similarly, Doan et al. (2022) emphasize the importance of gender-competent care within USA primary healthcare systems, arguing that responsiveness to gender diversity is vital to meeting the unique health needs of transgender and non-binary populations.

Comparative findings from other settings reinforce these conclusions. Roche et al. (2022), drawing from Australian healthcare experiences, highlight how tailoring clinical interactions to align with patients' social contexts, values, and perceptions significantly enhances the uptake and effectiveness of preventive health services, including contraception and HIV prevention. Studies from South Africa and Kenya echo similar themes, emphasizing that culturally congruent and empathetic healthcare interactions can mitigate stigma and improve access to PrEP and sexual health services (Logie et al., 2019; Tun et al., 2020; Van der Straten et al., 2018). These cross-national insights collectively emphasize the universal relevance of social determinants in shaping

healthcare access and efficacy, while also highlighting the need for context-specific strategies.

4.8.1.4 System-level strategies

Engaging key stakeholders and addressing social determinants such as stigma are consistently identified as critical strategies for optimizing the implementation and uptake of pre-exposure prophylaxis (PrEP). In Kenya, Irungu et al. (2021) underscore the value of involving stakeholders including healthcare workers, policymakers, and community leaders at every stage of PrEP program design and execution. This participatory approach enhances program ownership, aligns services with local needs, and fosters trust among target populations. Similarly, Van Heerden et al. (2022), drawing from South African experiences, highlight that stigma particularly related to HIV, sexual orientation, and gender identity remains a profound barrier to PrEP access and adherence, and must be systematically addressed through provider sensitization and community engagement.

Comparative evidence from high-income settings supports these findings. For example, Collins, McMahan and Stekler, (2020) and Calabrese et al. (2014) show that in the USA, reducing stigma through inclusive provider training and culturally competent communication improves client comfort and retention in PrEP programs. In Latin America, interventions that center community engagement, such as peer navigators and local advisory boards, have been effective in improving PrEP uptake among marginalized populations, including transgender women and men who have sex with men (Perez-Brumer et al., 2017).

Together, this international evidence base affirms that fostering trust, reducing stigma, and meaningfully involving communities are indispensable for the successful scale-up and long-term sustainability of PrEP programs across diverse sociopolitical and healthcare contexts.

4.8.2 CLIENT-LEVEL FACILITATORS

Client-level facilitators are individual factors that help promote the uptake, adherence, or successful engagement with health intervention (Golub, Gamarel and Surace, 2017; Refugio, Musinguzi and Kibuuka, 2020). The client-level facilitators identified in this review include knowledge and awareness, structural facilitators and social facilitators.

4.8.2.1 Knowledge and awareness

As a key client-level facilitator, individuals' comprehensive understanding of pre-exposure prophylaxis (PrEP) and their perceived susceptibility to HIV infection have emerged as crucial determinants for both the initiation and sustained use of PrEP services. This association was clearly demonstrated in a Kenyan implementation study by Mugwanya et al. (2019), which found that women attending family planning clinics who accurately assessed their HIV risk and understood PrEP's protective benefits were more likely to begin and adhere to the regimen.

Similar trends are observed globally. In the USA, Kelley et al. (2015) and Blumenthal et al. (2015) report that higher perceived HIV risk and PrEP literacy among men who have sex with men (MSM) significantly predicted uptake and retention. In South Africa, Van der Straten et al. (2018) highlighted that women's risk perception, shaped by partner behavior and gender power imbalances, directly influenced their PrEP decision-making. Likewise, in Brazil, Hoagland et al. (2017) emphasized that accurate self-perception of HIV risk among transgender and MSM populations was strongly associated with initiation and consistent PrEP use.

These findings underline the importance of embedding educational and risk-awareness interventions within PrEP delivery models to empower clients, strengthen informed decision-making, and promote long-term adherence across diverse healthcare settings.

4.8.2.2 Structural facilitators

Supportive service environments and timely, client-centered access to pre-exposure prophylaxis (PrEP) are widely recognized as critical client-level facilitators for successful PrEP uptake and continued engagement. In the USA context, Razon et al. (2021) highlight that clients are more likely to access and adhere to PrEP when healthcare settings are welcoming, nonjudgmental, and structured to minimize logistical barriers. Similarly, Rousseau et al. (2021) stress that youth-friendly, confidential environments and seamless access to personal health information significantly enhance PrEP access among adolescents and young adults, particularly those at high risk for HIV.

These findings are consistent with evidence from other countries. In South Africa, Stangl et al. (2020) found that creating stigma-free, adolescent-affirming service spaces improved PrEP uptake among young women. In Thailand, Pengnonyang et al. (2021) emphasized that convenience, privacy, and respectful provider attitudes were key determinants of PrEP continuation among female sex workers. Meanwhile, in Brazil, Hoagland et al. (2017) noted that centralized, community-integrated PrEP services tailored to LGBTQ+ populations significantly improved acceptability and retention.

Collectively, these studies affirm that accessible, respectful, and client-friendly healthcare environments coupled with user-centric service models play a pivotal role in facilitating PrEP integration, particularly for marginalized or high-risk populations across diverse global settings.

4.8.2.3 Social facilitators

Community-level acceptance and social normalization of pre-exposure prophylaxis (PrEP) have emerged as key client-level facilitators for successful PrEP uptake and continuity. In several African contexts, such as Kenya and South Africa, community perceptions and social dynamics significantly shape individuals' willingness to engage with PrEP services. Razon et al. (2021) observed that open disclosure of PrEP use, particularly when supported by peers or family, positively influenced adherence by

reducing stigma and fostering accountability. Similarly, Jackson-Gibson et al. (2021), in their study across urban African settings, emphasized the effectiveness of community-led education, peer mentorship, and social support programs in creating enabling environments for young women and other high-risk groups to initiate and maintain PrEP.

Comparable findings have been reported in other regions. In Thailand, Pengnonyang et al. (2021) documented how peer educators played a pivotal role in increasing trust and uptake among female sex workers, while in Brazil, community-based mobilization strategies and peer navigation significantly improved PrEP adherence among transgender women and men who have sex with men (Hoagland et al., 2017). In the USA, studies by Cahill et al. (2017) and Arnold et al. (2020) further highlight that peer-led outreach and culturally tailored messaging are especially effective in building trust and reducing misconceptions in marginalized communities.

Together, these international insights reinforce the importance of leveraging peer networks, community-based interventions, and social support systems to normalize PrEP use and improve long-term integration into individuals' health routines.

4.8.3 PROVIDER-LEVEL BARRIERS

Provider-level barriers are obstacles that hinder the implementation, uptake, or delivery of health interventions, which include lack of training, system and structural support, poor communication and system-level strategies (Katz et al., 2019; Krakower and Mayer, 2016; Blumenthal et al., 2015).

4.8.3.1 Structural/Resource Limitations

Provider-level barriers to pre-exposure prophylaxis (PrEP) integration are often rooted in persistent resource constraints that undermine service delivery, continuity of care, and health system responsiveness. In the USA context, Razon et al. (2021) report that insufficient staffing, limited consultation time, and space limitations in community health centers significantly impede the timely delivery and reach of PrEP services. These

operational constraints not only delay clinical processes but also compromise the overall quality of care and hinder provider efficiency.

Echoing these concerns, Sullivan and Siegler (2018) underscore the impact of inadequate laboratory capacity including shortages of diagnostic equipment, trained personnel, and processing facilities which delays essential testing services and weakens programmatic effectiveness, particularly in large-scale HIV prevention initiatives. Both studies emphasize that poor infrastructure for routine screening and medication monitoring leads to delayed diagnoses, disrupted care pathways, and reduced patient retention are critical challenges in scaling PrEP.

Similar barriers have been reported in lower-resource settings. In South Africa, Van Heerden et al. (2022) and Mansoor, de Kock and Karim (2019) highlight that chronic medication stockouts and fragmented supply chains contribute to inconsistent access to PrEP, negatively affecting client trust and long-term adherence. Doan et al. (2022) describe analogous issues within USA primary care clinics, noting that unreliable medication supplies, and lab infrastructure gaps create systemic bottlenecks, especially in underserved populations.

Across these varied contexts, the evidence points to a shared challenge: when frontline providers are burdened by inadequate resources whether physical, human, or logistical the success of PrEP integration efforts is significantly compromised. Addressing these barriers through targeted investment, strategic workforce planning, and strengthened supply systems is essential for optimizing PrEP delivery at scale.

4.8.3.2 Provider knowledge and attitude

A growing body of research identifies a range of provider-level barriers that undermine the effective integration of pre-exposure prophylaxis (PrEP) into healthcare systems, particularly in settings where HIV prevention is most needed. One of the most frequently cited challenges is the lack of comprehensive PrEP training and clinical knowledge among healthcare providers. Studies from the USA and Southeast Asia, including those

by Rayanakom et al. (2022), Doan et al. (2022), Mah (2022), and Wilson et al. (2021), underscore that gaps in provider knowledge directly impede their ability to confidently prescribe PrEP, conduct risk assessments, and deliver patient-centered counselling. Mah (2022) further emphasizes that providers' lack of self-efficacy often results in prescribing hesitancy, insufficient engagement with clients, and ultimately, lower uptake of PrEP services.

Compounding this issue, Rayanakom et al. (2022) highlight that stigmatizing attitudes toward PrEP users especially when linked to assumptions about sexuality, gender identity, or promiscuity persist among some healthcare workers, thereby reducing provider support and delaying access to prevention. This stigma is not unique to Asia; similar patterns have been observed in Sub-Saharan Africa and North America. For instance, Razon et al. (2021) and Wilson et al. (2021) found that providers in community health settings often report discomfort when addressing broader structural determinants of HIV vulnerability, such as poverty, racial discrimination, or gender-based violence. This discomfort limits the scope of patient counselling and prevents the delivery of holistic, equitable prevention strategies.

Across both high- and low-income settings, these findings suggest that improving PrEP integration requires more than clinical training alone, but it demands stigma-reduction interventions, structural competency education, and supportive institutional frameworks that empower providers to deliver culturally responsive, socially informed care.

4.8.3.3 Workload and Systemic Issues

Workload constraints have consistently emerged as a prominent barrier to effective HIV pre-exposure prophylaxis (PrEP) integration within healthcare systems globally. Numerous studies underscore how overwhelming clinical demands restrict the time healthcare providers can allocate to preventive services like PrEP. For instance, Razon et al. (2021), Mah (2022), and Wilson et al. (2021) observe that high patient loads limit individualized care, thereby compromising the quality and continuity of PrEP services. Similarly, research in Kenya and South Africa has demonstrated that overburdened

providers struggle to prioritize PrEP counseling and follow-up amidst acute care responsibilities (Van Heerden et al., 2022).

Razon et al. (2021) further elaborate that incorporating PrEP into standard clinical workflows disrupts routine operations, as it demands additional training, documentation, and patient education tasks that are often deprioritized due to time pressures. This is echoed by Ojikutu et al. (2018), who note that in USA urban health centers, integrating PrEP delivery without dedicated personnel contributes to burnout and workflow inefficiencies.

Institutional limitations compound these challenges. Van Heerden et al. (2022) highlight systemic deficits such as restrictive policy environments, staffing shortages, and limited infrastructural support, all of which inhibit PrEP scale-up. In Uganda and Malawi, for example, understaffing and the absence of national guidelines on PrEP administration have been cited as key deterrents to provider engagement (Celum et al., 2019; Muwonge et al., 2020).

Furthermore, patient-side factors that reflect provider-level bottlenecks such as prolonged waiting times, clinic overcrowding, and poor client flow reduce uptake and adherence. Van Heerden et al. (2022) document how these issues deter patients from attending follow-up visits, while inadequate patient tracking systems hinder continuity of care and timely adherence support. In Brazil, Grinsztejn et al. (2017) also found that inconsistent documentation and fragmented record-keeping undermined retention in PrEP programs.

Collectively, these findings reflect that without strategic investment in workforce capacity, workflow redesign, and health system infrastructure, PrEP integration efforts remain vulnerable to provider-level inefficiencies across diverse national contexts.

4.8.4 CLIENT-LEVEL BARRIERS

Client-level barriers such as low knowledge, stigma, cultural beliefs, and concerns about side effects can significantly affect the adoption and adherence to health interventions like PrEP (Golub, Gamarel and Surace, 2017).

4.8.4.1 Stigma and Social Factors

Stigma associated with HIV and sexuality remains one of the most critical client-level barriers to the effective uptake and sustained adherence to pre-exposure prophylaxis (PrEP). Across diverse global contexts, stigma manifests in multiple forms ranging from community-level judgment to internalized shame and consistently deters individuals from seeking HIV prevention services. Rousseau et al. (2021), Roche et al. (2022), Mansoor, de Kock and Karim, (2019), and Sullivan and Siegler (2018) highlight that stigma related to sexual activity, particularly among key populations such as men who have sex with men (MSM), transgender individuals, and sex workers, leads to fear of disclosure and concerns about being labelled promiscuous or HIV-positive. This fear undermines both initiation and adherence to PrEP regimens.

Social stigma is further amplified by interpersonal pressures. Jackson-Gibson et al. (2021) note that the fear of revealing PrEP use to family members, sexual partners, and peers contributes significantly to low uptake. Similar findings are reported in Kenya and Uganda, where young women and MSM avoid PrEP clinics to protect their social standing (Pintye et al., 2017; Muwonge et al., 2020). In Nigeria, Amu and Adegun (2020) found that community gossip and religious conservatism discouraged adolescents and women from accessing PrEP, even when it was freely available.

The influence of perceived judgment from healthcare providers also plays a critical role in deterring engagement with PrEP services. Rousseau et al. (2021) and Eakle et al. (2018) observe that many individuals internalize provider attitudes, real or perceived as

disapproving or moralistic, which reduces trust and makes clients hesitant to seek follow-up care or disclose adherence challenges.

Moreover, the absence of emotional and logistical support from personal networks poses a substantial hurdle. Studies across the USA, South Africa, and Latin America (Roche et al., 2022; Jackson-Gibson et al., 2021; Grinsztejn et al., 2017) reveal that limited encouragement from partners or family members results in isolation and diminished motivation to remain on PrEP. In particular, the lack of partner support due to suspicion, misinformation, or controlling dynamics can lead to discontinuation, especially among women in heterosexual relationships (Celum et al., 2019).

Finally, practical adherence issues are also tied to psychosocial barriers. Integrating PrEP into daily routines can be difficult for individuals who fear stigmatization, especially in contexts where taking pills is associated with illness or HIV infection. Rousseau et al. (2021), Roche et al. (2022), and Pintye et al. (2020) report that irregular pill-taking due to concealment, forgetfulness, or emotional distress contributes to inconsistent use and diminished program effectiveness.

Together, these findings point to the deeply embedded nature of stigma and social dynamics in shaping client decisions around PrEP. Addressing these challenges requires multi-level interventions that normalize PrEP use, foster supportive environments, and reduce structural drivers of stigma.

4.8.4.2 Knowledge and awareness

A persistent barrier to PrEP integration at the client level is the widespread lack of accurate knowledge regarding its use, effectiveness, and availability. Jackson-Gibson et al. (2021) emphasize that insufficient understanding of PrEP's preventive benefits often leads individuals to overlook or mistrust the intervention. Many potential users are unaware that PrEP is a scientifically validated biomedical strategy for reducing HIV risk, which results in underutilization, especially among high-risk populations.

This knowledge gap is not unique to one setting it has been observed across various socio-cultural contexts. In Kenya and Uganda, for example, studies by Velloza et al. (2022) and Muwonge et al. (2020) show that young women often misunderstand PrEP as a treatment for HIV rather than a preventive tool. This confusion contributes to stigma and disinterest in engaging with PrEP services.

Similarly, in Brazil and Thailand, research by Hoagland et al. (2017) and Ramautarsing et al. (2020) reveals that even among urban MSM, awareness of PrEP exists but is often accompanied by misinformation such as exaggerated concerns about side effects or doubts about long-term safety. In these cases, incomplete or incorrect information weakens the perceived utility of PrEP, discouraging initiation.

A study by Auerbach and Hoppe (2015) also notes that in the USA, knowledge gaps disproportionately affect Black and Latinx populations, where systemic barriers and historic mistrust of healthcare institutions limit engagement with new biomedical technologies like PrEP. Furthermore, women across Sub-Saharan Africa and parts of Southeast Asia frequently report learning about PrEP only through research studies or NGOs, indicating a lack of widespread community-level education (Corneli et al., 2015; Eakle et al., 2018).

In sum, inadequate knowledge shaped by poor health education, misinformation, and limited outreach remains a key barrier preventing clients from making informed decisions about PrEP. Without targeted education campaigns and culturally tailored messaging, PrEP uptake will likely remain suboptimal, especially among populations most vulnerable to HIV.

4.8.4.3 Individual and Perceived barriers

Client perceptions surrounding PrEP particularly concerns about side effects, inadequate communication, and unstable access represent critical barriers to its successful uptake and continued use. Razon et al. (2021) emphasize that fears regarding potential adverse

effects, such as nausea, headaches, or long-term organ damage, frequently deter individuals from initiating or adhering to PrEP, despite its high efficacy in HIV prevention. This hesitancy is mirrored in studies from South Africa and the USA, where client's express anxiety about how their bodies might react to the medication or its impact on pre-existing health conditions (Velloza et al., 2022; Pinto et al., 2020).

Moreover, poor communication between healthcare providers and clients often leads to misinformation or uncertainty. Multiple studies indicate that without clear, consistent, and culturally relevant education about PrEP including how it works, its safety profile, and the importance of adherence individuals are less likely to make informed decisions about its use (Eakle et al., 2018; Khawcharoenporn, Kawichai and Apisarnthanarak, 2018). In Thailand, for example, Khawcharoenporn , Kawichai and Apisarnthanarak, (2018) found that while initial awareness of PrEP was high among MSM, actual use remained low due to unaddressed concerns and inadequate counselling.

Conversely, when clients perceive PrEP as a reliable tool to prevent HIV especially in high-risk settings, they are more motivated to initiate and sustain its use. Razon et al. (2021) highlight that positive beliefs about PrEP's preventive benefits can outweigh concerns about side effects if individuals receive accurate, empathetic guidance from healthcare providers. This is supported by data from Brazil, where Grinsztejn et al. (2017) observed increased uptake in communities that combined education campaigns with peer support and clinical counselling.

Another critical yet under-discussed barrier is the mobility of at-risk populations. Frequent relocation whether due to employment, displacement, or seasonal migration can disrupt continuity of care, leading to lapses in PrEP adherence. This is especially relevant among transient workers, migrants, and mobile youth populations in Sub-Saharan Africa and Southeast Asia (Celum et al., 2019). A study in Kenya by Pintye et al. (2017) found that adolescent girls and young women who changed residences or schools often lost contact with their original PrEP providers, resulting in missed doses and eventual discontinuation.

Collectively, these findings illustrate the need for responsive and client-centered approaches that acknowledge personal health concerns, provide transparent communication, and ensure service continuity despite geographic mobility. Addressing these issues at the client level is key to improving both PrEP uptake and long-term adherence.

4.8.4.4 Access and Structural barriers

Structural limitations in healthcare delivery especially those related to funding, staffing, and infrastructure are significant client-level barriers that hinder access to and sustained engagement with pre-exposure prophylaxis (PrEP). Rousseau et al. (2021), Roche et al. (2022), and Jackson-Gibson et al. (2021) emphasize that under-resourced health systems result in insufficient availability of PrEP services, especially in public clinics where provider shortages and medication stockouts are common. These constraints disproportionately affect marginalized populations who rely on overstretched public healthcare services, thereby widening access disparities.

In South Africa, Van Heerden et al. (2022) report that systemic inefficiencies such as long wait times, poor client flow, and inadequate facility capacity deter clients particularly young women and key populations from initiating or maintaining PrEP. Similar patterns are evident in Kenya and Uganda, where overcrowded clinics and disjointed service delivery models discourage follow-up, leading to missed doses and treatment interruptions (Celum et al., 2019; Muwonge et al., 2020).

Beyond clinical resource shortages, broader structural and social determinants of health also undermine PrEP uptake. Gregg et al. (2020) highlight how homelessness, unstable housing, poverty, and limited transportation impede consistent access to PrEP in USA urban centers. Individuals facing housing insecurity often struggle to store medication safely, attend appointments, or maintain continuity of care. This challenge is echoed in Canada and Brazil, where PrEP access among low-income transgender individuals and sex workers is impeded by geographic and financial barriers (Ferlatte et al., 2019).

Moreover, lack of integration between social and health services further compounds these issues. In Thailand, Ramautarsing et al. (2020) found that while PrEP was technically available, many at-risk clients especially migrants and MSM were unable to navigate bureaucratic systems to access it. This disconnect between program design and lived realities limits the effectiveness of even well-funded initiatives.

To overcome these client-level barriers, interventions must go beyond clinical delivery and address the broader social contexts in which clients live. This includes improving health infrastructure, reducing bureaucratic bottlenecks, and integrating PrEP services with housing support, mental health care, and economic assistance.

4.9 DISCUSSION

4.9.1 PROVIDER-LEVEL FACILITATORS

The successful implementation and scale-up of pre-exposure prophylaxis (PrEP) programs hinge on a complex interplay of provider-level facilitators that influence service delivery across diverse health system contexts. This review has identified four interrelated domains that significantly contribute to effective PrEP integration: provider training and capacity development, structural and system-level support, provider–patient communication, and the embedding of tailored implementation strategies into healthcare systems.

First, comprehensive and continuous provider training is consistently recognized as foundational to PrEP delivery. Evidence from both high- and low-income countries illustrates that standardized education enhances provider confidence, reduces clinical uncertainty, and fosters more inclusive care models (Blumenthal et al., 2015; Mugwanya et al., 2019; Mah, 2022). Notably, while structured professional development programs are more common in resource-rich settings, low- and middle-income countries (LMICs) have adopted adaptive approaches such as task-shifting and digital modular training to mitigate resource constraints (Van Heerden et al., 2022; Irungu et al., 2021).

Second, enabling environments supported by strong leadership, streamlined infrastructure, and clear clinical guidelines facilitate more effective PrEP service provision. Comparative analyses reveal that while high-income countries benefit from robust institutional frameworks, LMICs face chronic operational barriers such as stockouts, staff shortages, and fragmented supply chains (Razon et al., 2021; Grimsrud et al., 2020). Addressing these system-level deficiencies is essential for equitable PrEP access and long-term sustainability, particularly in regions where the burden of HIV is highest.

Third, effective provider–client communication emerges as a crucial facilitator of patient-centered PrEP care. Integrating conversations around social determinants such as stigma, poverty, and gender inequality into clinical interactions enhances trust and improves uptake, especially among marginalized populations. Studies from diverse contexts including the USA, Australia, and Sub-Saharan Africa demonstrate that culturally competent and empathetic care is universally beneficial yet must be contextually adapted to local norms and patient experiences (Roche et al., 2022; Logie et al., 2019; Doan et al., 2022).

Finally, stakeholder engagement and stigma reduction are central to scaling PrEP services. Involvement of community leaders, peer navigators, and frontline providers throughout program design and implementation builds community trust and ownership, which are critical for program acceptance. Simultaneously, targeted efforts to reduce stigma through provider sensitization and inclusive communication are shown to improve patient comfort, adherence, and retention across regions including Kenya, South Africa, the USA, and Latin America (Van Heerden et al., 2022; Collins, McMahan and Stekler, 2020; Perez-Brumer et al., 2017).

In conclusion, enhancing provider-level facilitators requires multi-level, context-specific strategies that bridge knowledge gaps, strengthen healthcare infrastructure, improve interpersonal care dynamics, and actively engage communities. As global efforts to end the HIV epidemic increasingly rely on preventive interventions like PrEP, empowering

providers through training, support, and inclusive practices will be indispensable to achieving equitable, sustained impact.

4.9.2 CLIENT-LEVEL FACILITATORS

Client-level facilitators play a pivotal role in promoting the successful uptake, adherence, and sustained engagement with pre-exposure prophylaxis (PrEP) services. As revealed in this review, these facilitators can be broadly categorized into three interdependent themes: individual knowledge and risk perception, access to supportive healthcare environments, and social acceptance through peer and community support.

Foremost among these is the role of individual knowledge and perceived HIV risk. A consistent body of evidence across settings demonstrates that clients who possess a clear understanding of PrEP's function and benefits and who accurately assess their own HIV vulnerability are significantly more likely to initiate and maintain PrEP use. From family planning clinics in Kenya (Mugwanya et al., 2019) to MSM communities in the USA (Kelley et al., 2015; Blumenthal et al., 2015) and transgender populations in Brazil (Hoagland et al., 2017), PrEP literacy and personalized risk awareness emerge as strong predictors of adherence. These findings underscore the value of embedding targeted educational interventions and risk-assessment tools into service delivery models to support informed client decision-making globally.

Equally important are structural and service-related enablers that shape the accessibility and acceptability of PrEP. Across both high- and low-resource settings, client-friendly environments characterized by nonjudgmental staff, confidentiality, convenience, and youth- or key population-sensitive design are shown to improve PrEP uptake and retention. Studies from the USA (Razon et al., 2021; Rousseau et al., 2021), South Africa (Stangl et al., 2020), Thailand (Pengnonyang et al., 2021), and Brazil (Hoagland et al., 2017) all confirm that when clients feel safe, respected, and welcomed, they are more likely to engage consistently with HIV prevention services. Thus, designing health

systems that prioritize user experience is crucial to expanding reach among vulnerable populations.

Finally, the social dimension of PrEP use particularly community-level acceptance and peer support has emerged as a transformative facilitator of PrEP normalization. Evidence from Kenya, South Africa, Thailand, Brazil, and the USA illustrates that peer-led outreach, community education campaigns, and social support networks are effective in countering stigma, fostering accountability, and reinforcing positive health behaviors (Jackson-Gibson et al., 2021; Cahill et al., 2017; Arnold et al., 2020). These interventions are especially impactful in contexts where stigma related to HIV, sexuality, or PrEP use remains a deterrent.

In conclusion, advancing client-level facilitators requires a holistic, people-centered approach that addresses both individual decision-making and the broader sociocultural and healthcare contexts in which clients live. By integrating health education, service accessibility, and community-driven support mechanisms, PrEP programs can enhance reach, improve retention, and support equitable HIV prevention outcomes globally.

4.9.3 PROVIDER-LEVEL BARRIERS

Provider-level barriers remain a critical impediment to the effective implementation and scale-up of pre-exposure prophylaxis (PrEP) services across global healthcare systems. These barriers ranging from structural limitations and insufficient training to stigmatizing attitudes and systemic workload constraints collectively reduce the efficiency, equity, and reach of HIV prevention efforts.

A core barrier consistently highlighted in both high- and low-resource settings is resource inadequacy. Studies from the USA (Razon et al., 2021; Sullivan and Siegler, 2018) and South Africa (Van Heerden et al., 2022; Mansoor, Karim and Baxter, 2019) emphasize how shortages in staff, clinical space, laboratory capacity, and reliable medication supplies hinder timely service delivery, delay critical diagnostics, and disrupt continuity of

care. These infrastructural deficits not only affect provider performance but also erode patient trust, particularly in underserved populations. Without substantial investment in physical, logistical, and technological resources, frontline providers remain constrained in their ability to deliver consistent, high-quality PrEP care.

Closely intertwined with these material barriers are gaps in provider training and knowledge. Across diverse settings including Southeast Asia, Sub-Saharan Africa, and North America studies reveal that many healthcare providers lack adequate preparation to assess HIV risk, prescribe PrEP confidently, or counsel patients effectively (Rayanakom et al., 2022; Mah, 2022; Doan et al., 2022). In addition, providers' low self-efficacy and concerns about their own expertise can lead to prescribing hesitancy, weak patient engagement, and missed opportunities for prevention. These challenges are further compounded by stigmatizing attitudes rooted in social biases around sexuality, gender identity, or perceived promiscuity, which disproportionately impact marginalized populations such as MSM, transgender individuals, and sex workers (Wilson et al., 2021; Razon et al., 2021). Addressing these attitudinal barriers requires integrating structural competency and stigma-reduction into professional development initiatives.

Systemic workload pressures also present a major obstacle. Providers across Kenya, South Africa, and the USA report that excessive patient volumes and competing clinical priorities prevent them from offering individualized PrEP services, including follow-up and adherence counselling (Mah, 2022; Van Heerden et al., 2022). The incorporation of PrEP into already overstretched clinical routines, without designated personnel or streamlined workflows, has led to burnout and reduced service quality (Ojikutu et al., 2018). Institutional challenges such as policy gaps, fragmented documentation systems, and poor patient tracking further exacerbate inefficiencies and contribute to patient attrition (Grinsztejn et al., 2017).

Collectively, these findings highlight the urgent need for comprehensive, system-wide strategies to address provider-level bottlenecks. Such strategies should include:

- Investing in infrastructure and human resource capacity.

- Expanding provider training with a focus on clinical competence, stigma reduction, and structural sensitivity.
- Redesigning workflows to accommodate preventive services.
- Developing clear policies and guidelines to support PrEP integration at scale.

Only through coordinated and context-sensitive efforts can health systems empower providers to act as effective agents of HIV prevention, ensuring that PrEP reaches those most in need and contributes meaningfully to global HIV control goals.

4.9.4 CLIENT-LEVEL BARRIERS

Despite its proven efficacy, the successful integration of pre-exposure prophylaxis (PrEP) into global HIV prevention strategies continues to be hindered by a constellation of client-level barriers. These include stigma, limited knowledge, perceived and real side effects, poor service accessibility, and broader structural and social inequities. Together, these barriers not only deter initial uptake but also threaten long-term adherence and retention in care particularly among those most vulnerable to HIV infection.

Stigma both internalized and external is among the most entrenched and pervasive barriers. Across contexts such as Sub-Saharan Africa, Latin America, Southeast Asia, and North America, stigma related to HIV, sexual behaviour, and PrEP use discourages individuals from engaging with services due to fear of judgment, discrimination, or social exclusion (Rousseau et al., 2021; Jackson-Gibson et al., 2021; Mansoor, de Kock and Karim, 2019). This stigma is amplified by interpersonal dynamics; the fear of disclosing PrEP use to family or partners often results in concealment or avoidance, particularly among women, LGBTQ+ individuals, and adolescents. Studies from Kenya, Nigeria, and the USA highlight how lack of social support and fear of being labelled “at risk” reduces motivation to initiate or remain on PrEP (Amu and Adegun, 2020; Celum et al., 2019).

Compounding these challenges is the widespread lack of accurate knowledge about PrEP. Across countries including Kenya, Brazil, Thailand, and the USA many individuals misunderstand PrEP as HIV treatment rather than prevention or hold fears about its safety

and side effects (Hoagland et al., 2017; Ramautarsing et al., 2020; Auerbach and Hoppe, 2015). This misinformation, often fuelled by inadequate provider communication and limited public health education, undermines informed decision-making and reduces trust in biomedical prevention tools. These knowledge gaps are particularly prominent among key populations such as adolescent girls, sex workers, and racial/ethnic minorities, often due to systemic neglect and historical medical mistrust (Velloza et al., 2022; Corneli et al., 2015).

Concerns about side effects, whether actual or perceived, further discourage PrEP initiation and persistence. Individuals frequently cite fears of nausea, long-term toxicity, or medication interactions as reasons to avoid or discontinue PrEP especially when these concerns are not addressed through effective counseling (Razon et al., 2021; Pinto et al., 2020). Poor communication and lack of follow-up contribute to these anxieties, particularly in resource-constrained settings where client-provider interactions are rushed or inconsistent (Eakle et al., 2018; Khawcharoenporn, Kawichai and Apisarnthanarak, 2018).

Mobility and instability represent another layer of vulnerability, especially among migrant workers, youth, and populations facing homelessness. As shown in studies from Kenya, Uganda, and the USA, frequent relocation disrupts access to health services and leads to loss of contact with PrEP providers (Pintye et al., 2017). Without strategies to ensure continuity of care such as multi-month dispensing, mobile clinics, or interoperable records mobility remains a major risk for adherence disruptions.

Finally, structural determinants of health, such as poverty, housing insecurity, and limited transportation, severely limit PrEP access in many communities. Overstretched public health systems, long wait times, medication stockouts, and non-integrated services disproportionately affect marginalized clients who rely on public or community-based care (Van Heerden et al., 2022; Gregg et al., 2020). Even when PrEP is technically available, systemic inefficiencies and social exclusion make it inaccessible to many who need it most.

In conclusion, addressing client-level barriers to PrEP requires a holistic, multi-level response that:

- Normalizes PrEP through stigma-reduction and community education.
- Enhances awareness with tailored, culturally relevant health promotion.
- Builds trust through respectful, inclusive provider-client communication.
- Supports continuity of care amid geographic and social instability.
- And expands structural supports to remove logistical and economic barriers.

Only by addressing these barriers in tandem can PrEP interventions become more equitable, accessible, and effective in curbing HIV transmission worldwide.

4.10 SUMMARY

This chapter presented the scoping review findings of the study, mapping the existing literature and illustrated in the PRISMA-ScR diagram. The aim of the review was to identify facilitators and barriers of integrating HIV PrEP HIV into PHC services. Out of the fifteen studies considered fourteen facilitators and twenty-nine barriers were identified. The underscoring narrative from the review is that the integration of HIV PrEP is feasible but needs the barriers addressed robustly.

The next chapter will present and discuss the qualitative findings.

CHAPTER FIVE

PRESENTATION AND DISCUSSION OF QUALITATIVE FINDINGS

5.1 INTRODUCTION

This chapter presents the findings of the qualitative phase of the study, the discussion, and a summary of the chapter. The purpose of the study in Phase 2 was to explore nurses' perceptions of integrating HIV PrEP into primary healthcare services. This phase used a data collection instrument consisting of two sections. The first section consisted of demographic data that was analysed using descriptive statistics.

The second section collected data from four focus group discussions using a semi-structured interview guide. The responses were audio-recorded and transcribed, and a thematic analysis was conducted. The findings are presented using themes, categories, and sub-categories.

5.2 PARTICIPANTS' DEMOGRAPHIC DATA

The study participants were primary health care nurses providing services in community health care centres and nurses employed by an NGO supporting the Department of Health in the Matlosana sub-district. Thirty (n=30) PHC nurses consented to participate in the study and were divided into four focus groups with no more than ten (10) members per group. Table 5-1 provides an overview of the demographic characteristics of the participants.

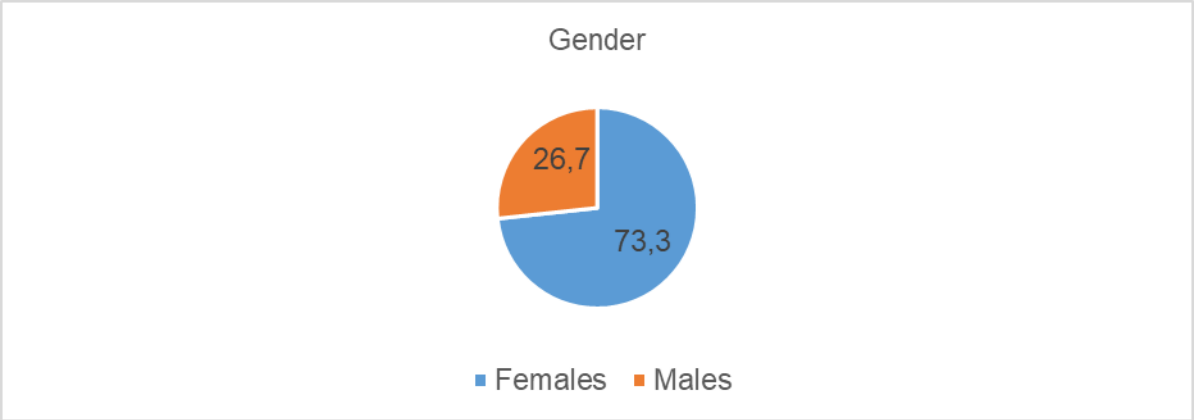
Table 5-1 Demographic characteristics (n= 30)

Gender	Frequency (n)	Percentage (%)
Male	8	26.7%
Female	22	73.3%
Age		
20-29	6	20%
30-39	11	36.7%
40-49	8	26.7%
50-59	3	10%
60-65	2	6.6%
Level of education		
Undergraduate diploma/degree	21	70%
Postgraduate diploma/degree	9	30%
Master's degree	0	0%
Doctorate	0	0%
Work Experience		
6 months -1year	1	3.3%
2-5 years	9	30%
6-10 years	4	13.3%
11-15 years	5	16.7%
16-20 years	6	20%
>20 years	5	16.7%

- **Gender**

Females accounted for a larger number of participants, 73.3% (n=22), and males accounted for 26.7% (n=8) of the total sample (n=30). Figure 5.1 below shows the gender of participants.

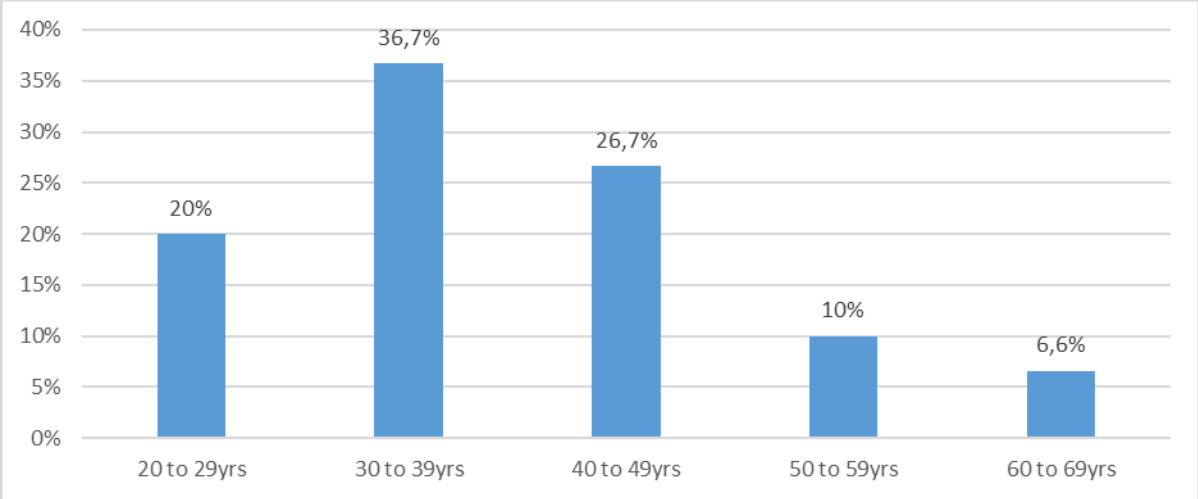
Figure 5.1 Gender of participants (n=30)



- **Age**

The ages of the participants ranged from 20 to 69 years. The majority were between 30 and 39 years (36.7%), followed by those aged 40 to 49 years (26.7%). Participants aged 20 to 29 years accounted for 20% of the sample, while those aged 50 to 59 years and 60 to 69 years represented 10% and 6.6%, respectively. The distribution of participants across the age groups is illustrated in Figure 4.2.

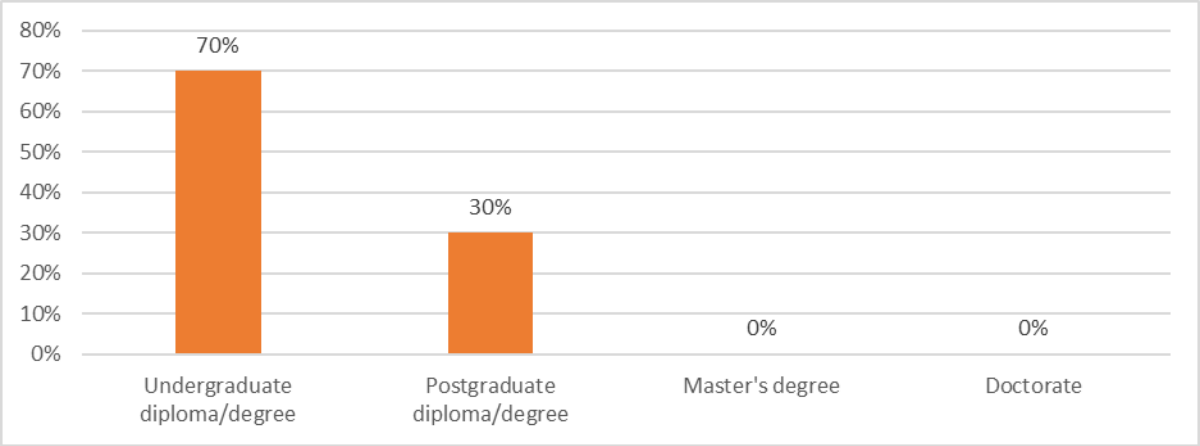
Figure 5.2 Age distribution (n = 30)



- Level of education

The largest group of participants completed an undergraduate diploma/degree (70%; n=21), followed by a postgraduate diploma/degree (30%; n=9). No participants completed the qualifications for both master's degrees and Doctorates. Figure 5.3 displays the level of education of the participants.

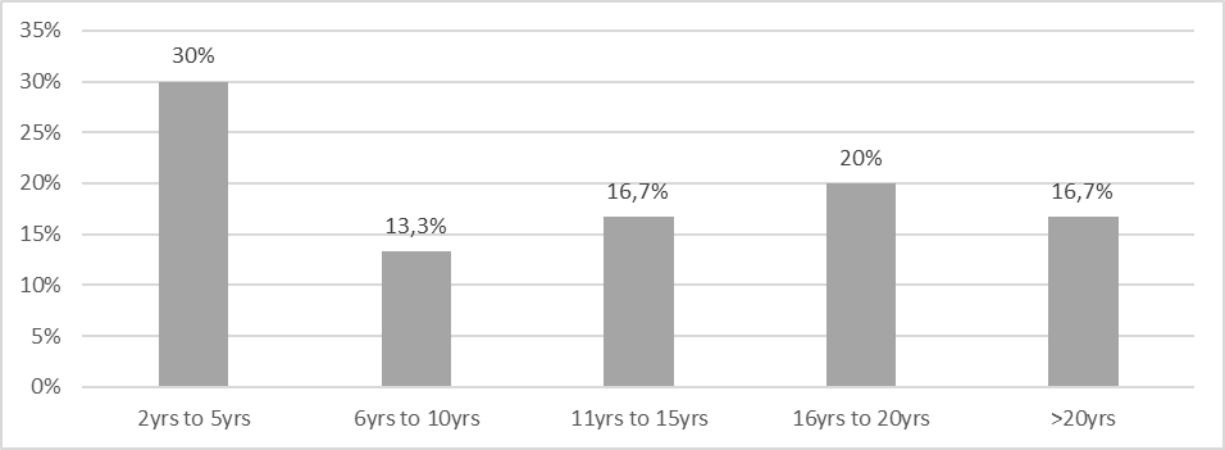
Figure 5.3 Level of education (n = 30)



- Work experience

Participants' work experience ranged widely, with the lowest proportion (3.3%; n = 1) having between 6 months and 1 year of experience. The highest proportion (30%; n = 9) reported between 2 and 5 years of experience. The remaining participants were distributed across four broader experience categories: 6 to 10 years (13.3%; n = 4), 11 to 15 years (16.7%; n = 5), 16 to 20 years (20%; n = 6), and more than 20 years (16.7%; n = 5). Overall, the data reflects a balanced mix of early-career, mid-career, and veteran professionals. Figure 5.4 illustrates the distribution of participants' work experience.

Figure 5.4 Work experience (n=30)



5.3 EMERGENT THEMES

The data collection process involved asking a primary research question, followed by probing questions. The main question asked was "*Please tell me what the integration of HIV PrEP into primary health care services means to you*? The probes explored the perceptions regarding integration of HIV PrEp into PHC as well as factors that should be considered, that will enhance, and that could hinder the integration of HIV PrEP into primary health care services. Braun and Clarke (2021) thematic analysis was applied to explore emerging themes, whereas Mayring (2000) guided the development of categories, and subcategories in the data analysis process. Statements were analysed. Keywords were identified, and codes were given. Five themes, 16 categories, and 18 subcategories were identified. Statements were extrapolated to support the identified codes. Supervisors reviewed the audio-recorded, transcribed interviews to ensure rigour of the study. Co-coding of the interviews was conducted, and consensus was reached on emergent themes, categories, and sub-categories. The letter (R) means the participant, and (FG) means focus group. The results are presented in two parts. The first section is the central theme that summarizes the focus of the participants' views. The second part is the presentation of the themes, categories and sub-categories in Table 5.2.

5.3.1 Central theme: PrEP awareness

The central theme is the main underlying idea, issue, or message that a literary work, research, or art form continually explores and develops. It represents the core meaning that unifies the various elements within a text or study. Baldick (2015) states that the central theme is "an abstract concept that is made concrete through representation in character, action, and imagery." In research writing, as Creswell and Creswell (2017) explain, identifying a central theme helps to "focus the inquiry and frame the interpretation of data," providing coherence to the overall narrative.

The central theme emerging from the analysis is that PrEP awareness is a multidimensional and community-dependent process that requires active facilitation through diverse communication channels, trusted networks, and integrated outreach strategies across the social-ecological spectrum. Awareness is not a product of information dissemination alone; instead, the credibility of the messenger, the accessibility of services, and the degree to which communication is embedded in the cultural and social fabric of communities all shape it. Mass media and digital platforms provide important visibility and reach. However, their effectiveness is significantly enhanced when complemented by interpersonal advocacy, peer networks, and community leaders who translate knowledge into trust and action.

The findings demonstrate that integrating PrEP awareness into existing health services yields important benefits, particularly in normalising discussions around HIV prevention and reducing stigma. Service integration enables awareness to move beyond abstract knowledge by creating concrete and accessible entry points into care. When PrEP awareness is situated within established healthcare touchpoints such as HIV testing, reproductive health services, and routine clinical encounters, it not only broadens reach but also ensures that awareness is reinforced by direct opportunities for uptake. In this way, awareness becomes embedded within systems that individuals already engage with, making prevention strategies more tangible and sustainable.

At the same time, several facilitators of PrEP service integration emerged as essential in strengthening awareness and uptake. Trust-based relationships with health providers, peer educators, and community champions are central to bridging the gap between institutional systems and community realities. Cross-sector collaborations between healthcare providers, NGOs, and advocacy groups further enhance the cultural relevance of outreach efforts, ensuring that communication strategies are responsive to diverse social contexts. These facilitators highlight the importance of recognising awareness as a collaborative process that thrives when institutional mechanisms and grassroots advocacy are aligned.

Nevertheless, the analysis also identified significant barriers that constrain both PrEP awareness and its integration into services. Stigma surrounding HIV, persistent misinformation, structural inequalities, and fragmented health systems undermine the effectiveness of awareness campaigns. Over-reliance on a single communication mode or strategy, such as clinic-based education without community engagement, was shown to limit reach, reinforce exclusion, and perpetuate mistrust. These barriers underscore the need for a multidimensional approach, as they demonstrate that sustainable awareness cannot be achieved through isolated or one-size-fits-all strategies.

Drawing on these insights, the study recommends that PrEP awareness initiatives adopt multi-channel communication approaches that balance the reach of mass media with the depth of community-driven advocacy. Trusted networks, including peers, local leaders, and healthcare providers, should be prioritised as key vehicles for both credibility and dissemination. Awareness strategies must be coupled with service integration across individual, community, and institutional levels so that knowledge is consistently reinforced by opportunities for uptake. Finally, sustained efforts are needed to challenge stigma and misinformation through culturally sensitive messaging and supportive policies. Taken together, these recommendations align with the central theme by underscoring that PrEP awareness is not an isolated intervention but a layered, inclusive, and trust-centred process requiring synergy between traditional and innovative strategies across the social-ecological spectrum.

Table 5.2 Themes, categories and sub-categories

Theme	Category	Sub-categories
Theme 1: PrEP awareness strategies	1.1 Media	
	1.2 Health educators	1.2.1 Facility health educators
		1.2.2 Community health workers
		1.2.3 General workers
		1.2.4 Clients/patients
	1.3 Campaigns/outreach	
	1.4 Referral	
Theme 2: Benefits of service integration	2.1 Patient	2.1.1 Reduced transmission
		2.1.2 Reduced stigma
	2.2 Health service provider	2.2.1 Reduced workload
Theme 3: Facilitators of PrEP service integration	3.1 Patient health-seeking behaviour	3.1.1 Compliance to medication
	3.2 Partner support	
	3.3 Youth friendly services	
Theme 4: Barriers to HIV PrEP integration	4.1 Service availability or accessibility	4.1.1 Patient waiting time
	4.2 Staff member-related aspects	4.2.1 Competency
		4.2.2 Lack of confidence
		4.2.3 Communication
	4.3 Medicine shortage	4.3.1 Availability
	4.4 Reluctance	4.4.1 Patient
		4.4.2 Staff
Theme 5: Recommendations	5.1 Compliance with system/guidelines	
	5.2 Staff training	5.2.1 Counsellors
		5.2.2 Prescribing
	5.5 Resources	5.5.1 Stock

5.3.2 Theme one: PrEP awareness strategies

According to UNAIDS, (2020), awareness programmes are instrumental in educating the masses, both young and old, to counteract the spread of HIV and undertake disease prevention. Participants expressed the need for PrEP awareness through either media sources, health educators, campaigns/outreach, or referrals.

5.3.2.1 Media

Media plays a crucial role in raising awareness by educating the public, reducing stigma, and encouraging prevention (Noar et al., 2009). Participants highlighted the importance of media such as radio stations, pamphlets, TV educational programmes, and social media for raising PrEP awareness due to its ability to reach a wide audience.

Quotes from participants that support the use of the various media that can be used for health awareness**:** *"if there can be some pamphlets like the way they did with the HIV treatment, so that information can be more available to them"* (FG3, R3).

"I think the department of health also needs to play its role on conveying the message to the community. Remember when we were still young, we were watching Soul City, we knew about HIV even before we were nurses" (FG3, R3).

"I think they should use other means like Facebook, twitter just to convey the message" (FG3, R3).

5.3.2.2 Health educators

Health educators play a vital role in raising awareness of HIV PrEP by serving as trusted sources of information, providing personalized guidance, and supporting healthier communities (Karris et al., 2014). According to some participants, this can be effectively achieved through facility-based health educators who engage patients directly and distribute informational pamphlets within the facility.

The participants' comments are as follows: *"I think if we have somebody who can do health education on daily in the facility and then also, we must give the pamphlets because the pamphlets are available, you must give the pamphlets so that the people can go and educate"* (FG2, R2).

"When we start a client on PrEP we need to do intensive health education because others it doesn't mean their partners are positive, but they are a high risk due to being unfaithful" (FG3, R3).

Other participants recommended / suggested the involvement of community health workers, noting their regular interaction with a wide range of community members beyond their professional duties. *"Even if they can teach the CHW's, we the professional nurses, they are the one most of the time who are in contact with the community at large at outside location"* (FG2, R4).

General workers were mentioned as part of team members to be used to spread the information about communities and family members, not only professionals. Quotes from participants that support the statement are: *"I think it is all about health education, the staff members not only the professional nurses, from groundsman out there so that we cascade the information to our family members and the community"* (FG1, R4).

Educating clients/patients who attend the clinic for other reasons about PrEP was emphasised by another participants so that they become aware of it that is provided in facilities. *"I think also, health education should be given to the clients so that they are aware of PrEP that is offered in primary health care services"* (FG1, R1).

5.3.2.3 Campaigns/outreach

Campaigns and outreach efforts are essential for raising awareness because they bring vital information directly to the communities that need it most. They spread a word to large and diverse audiences (Friedman et al., 2016).

One participant mentioned that campaigns where professional health care providers will be involved and also distribute pamphlets are necessary to raise awareness about PrEP. *"The other thing is that to conduct campaigns, health care professionals will move from*

the health care facilities to the community and then hand out pamphlets to the community" (FG2, R1).

5.3.2.4 Referrals

Referrals play a critical role by connecting individuals with the right information, services, and support systems. Many people may have heard about PrEP but don't know where to go or how to get it (Calabrese, Krakower, and Mayer, 2017). Referrals help guide individuals from awareness to action by linking them to clinics, healthcare providers, and community programs that offer PrEP services. Participants stated that referring clients/patients for PrEP services can also promote the uptake of PrEP. *"I have started the motion of, referring everyone who tested negative for PrEP"* (FG4, R2).

"So, during ANC, pregnant women, we are always encouraging them to take PrEP when they tested negative" (FG4, R4).

"I remember that we have AZT/3TC and refer the client to the doctor and tell the doctor the options there is, he must make a decision because now this client does not qualify for PrEP" (FG4, R2).

5.3.3 Theme two: Benefits of service integration

The benefits of PrEP service integration emanating from the analysed data were categorized into the patient benefits and the health service provider.

5.3.3.1 Patient

According to participants, PrEP presents a great opportunity to aid HIV prevention. They specifically mentioned its potential to reduce transmission and lessen the stigma experienced by users.

- **Reduced transmission**

Several participants highlighted a key benefit of PrEP and its potential to reduce HIV transmission, aiming to lower infection rates within the community. The following quotes bear evidence: "*It might be to flatten the curve of infection so the infection rate will be at minimal when we are having this PrEP"* (FG1, R1).

"We going to have lower transmission of virus so that means there will be lower numbers of people contracting HIV" (FG2, R1).

- **Reduced stigma**

Beyond its biomedical effects, participants highlighted PrEP's profound potential to dismantle the pervasive stigma surrounding HIV, easing anxieties for both individuals living with HIV and those using prevention methods.

The statements below support these benefits. *"It reduces the stigma around the community, say for example, right now if you are having a partner and she is HIV positive, you are not going to stress to say, okay I wanted to spend my time with this person but then the reason being that her health is compromised"* (FG2, R1).

"It reduces the stigma that people have around being HIV positive. If they have the information that you can take PrEP for those that are HIV negative to remain being negative it also reduces that stigma around the HIV positive clients" (FG1, R2).

Packaging of antiretroviral therapy (ART) medications can inadvertently contribute to stigma and unintentional disclosure of HIV status. Specifically, features such as bulky containers, rattling pills, or visibly labeled boxes can make it difficult for individuals to conceal their condition, leading to heightened anxiety, fear of discrimination, and treatment avoidance (Muiruri et al., 2020).

This association between packaging and stigma has been cited by participants as a barrier to adherence and a cause of social discomfort among people living with HIV**.** *"I think will reduce the stigma of ART and PrEP is providing us with the sponge inside the containers so that it cannot make a lot of noise because most of the clients even those who are on ART when they come to take their medication they will open and put some tissue just to prevent the container from making a lot of noise"* (FG1, R3).

"The client will be afraid *to come, specifically and especially for the PrEP but once it is integrated, it will ease off that stigma"* (FG3, R1).

"Immediately you give the container, they take it out and put it in their own container that does not make a noise" (FG3, R2).

5.3.3.2 Health service provider

- **Reduced workload**

Health service providers play a key role in successfully integrating HIV PrEP into primary health care services, offering a range of benefits that improve access, uptake, and long-term prevention outcomes (Liau et al., 2014). One of the key advantages of health service integration is the reduction of workload for healthcare providers, achieved by eliminating duplicated services and streamlining patient care pathways. Integration allows for more efficient use of resources and time, enabling providers to deliver multiple services in a single interaction, thus improving both efficiency and patient satisfaction (Milford et al., 2018).

One participant stated that they will experience a reduced workload. "*That will lead to us getting reduced workload in the facilities so it will assist us in the workload"* (FG2, R1).

5.3.4 Theme three: Facilitators of PrEP service integration

Facilitators to PrEP service successfully embed PrEP into existing health care services. These facilitators help improve access, uptake, delivery, and sustainability and are categorised as patient health-seeking behaviour, partner support, and youth-friendly services (Matambanadzo et al., 2020).

5.3.4.1 Patient health-seeking behaviour

Agofure (2013), in a study conducted in Nigeria, describes health-seeking behaviour as any activity undertaken by individuals who perceive themselves to have a health problem or to be ill to find an appropriate remedy. Patient health-seeking behaviour is a key facilitator of PrEP service integration because it directly influences the demand for, access to, and successful uptake of PrEP within the healthcare system. From the discussions, patient health-seeking behaviour was categorised as compliance with medication.

This was affirmed by participants' quote: *"We take the blood, and we offer them three months' supply, they are coming back and most of them, when you give them the follow-up, they are not missing the dates, they are really coming up"* (FG2, R1).

"Also, one thing I heard from one client was that the reason why they will not come for a few months is because the client's partner only comes home once in a while and only when the partner comes then they will get PrEP but if the partner is not coming home then she just stays at home and does not take her PrEP" (FG1, R4).

"It means encouraging our clients or community at large to know their status because remember before you can initiate a person on PrEP, they first have to know their status" (FG2, R2).

5.3.4.2 Partner support

Heaney and Israel (2008) describe partner support as the perception and actuality of being cared for, having assistance available from other people, and feeling valued. Partner support is vital to PrEP service integration as it helps individuals start, continue, and succeed with PrEP within the broader healthcare system. Supportive structures around the patient make PrEP more accessible, acceptable, and sustainable. The focus group discussion noted the importance of support from close family members especially the partners.

The importance of the partner support is quoted from participants as follows: *"I think with me, the patients that I have are getting support from their partners who are already on HIV treatment"* (FG1, R3).

"It was an agreement of both partners because they came both of them" (FG3, R1*).*

"Usually what helps is, bring the partner along on your visits. It doesn't happen all the time" (FG4, R3).

5.3.4.3 Youth friendly services

Youth-friendly services are programs that are specifically designed to be accessible, acceptable, and appropriate for young people (WHO, 2012). In South Africa, youth-friendly services were introduced as part of national efforts to address the health and developmental needs of young people in response to challenges such as high rates of HIV and AIDS and others. They are a powerful facilitator of PrEP service integration, especially in settings where young people are at risk of HIV.

One participant emphasised that youth friendly services that are designed to be accessible, acceptable, and appropriate for adolescents and young people, offering

services in a confidential and non-judgemental manner are instrumental in facilitating the PrEP service integration into primary health care services.

Quote from participant that support the statement is: "*I think we should also take into consideration their age because now if we are talking about the adolescence and the youth it means we have to integrate that service into the adolescent and youth services*" (FG3, R1).

5.3.5 Theme four: Barriers of PrEP integration

Integrating PrEP into primary health care services can be highly effective, but several barriers and challenges can limit its success (Giovenco et al., 2021). The barriers identified by participants during focus group discussions were categorised as service availability or accessibility, staff member-related aspects, staff training, and medicine- and patient-related aspects.

5.3.5.1 Service availability

Service availability is a significant barrier to integrating PrEP into routine primary health care services. When PrEP service is not readily available where and when people need it, uptake remains low even among individuals who are at high risk of HIV and would benefit from it (Pintye et al., 2020).

One participant stated that patient waiting time at clinics is a problem for clients/patients: "*There is an issue of standing on long queue, so some people have a problem with coming back because now you have to go back to the long queue*" (FG1, R4).

One participant highlighted challenges with blood collection services, noting that samples cannot be collected on weekends due to the unavailability of courier services during that time "*The collection is Monday until Friday, Saturday and Sunday there is no collection*" (FG3, R1).

5.3.5.2 Staff member-related aspects

Staff-related aspects can present significant barriers when integrating PrEP services into existing health care services (Dovel et al., 2021). The obstacles that emerged during the FGDs were competency, lack of confidence, reluctance, and communication.

Comments from several participants supporting the category: Inadequate training and procedural errors such as misinterpreting testing time limits and incorrect use of buffer solutions have led to false results and compromised diagnostic accuracy during patient testing.

"We find that we have had patients test positive because the interpreter didn't do it within the specified 15 minutes" (FG4, R5).

"And then most clinicians are not even familiar with the correct amount of buffer" (FG4, R1).

"PrEP has its own clinical stationary so somewhere somehow; we are struggling not knowing how to fill the form" (FG1, R2).

A lack of confidence among health care providers is a significant barrier to integrating PrEP into primary health care services (Blackstock et al., 2017). Some health care providers question the effectiveness of PrEP.

Several participants affirmed the statement: ***"****I am issuing PrEP but I'm a bit sceptical on implementing PrEP. Reason being, considering the HIV cycle, HIV cycle has seven stages, and the drug of choice is your integrase inhibitor, two actually, two integrase inhibitors"* (FG4, R1).
"Because we are only preventing the integration, and we are saying HIV survives within the host cell. So, what happens to the virus after exposure if we are ignoring the two

important steps of HIV cycle? So hence I'm a bit sceptical, I'm issuing because I should be doing that, but I have a question as far as PrEP is concerned" (FG4, R1).

Reluctance presents a significant barrier to integrating PrEP into primary health care services (Krakower and Mayer., 2016). This hesitation may stem from personal beliefs, discomfort discussing PrEP, stigma surrounding HIV prevention, as alluded by participants: *"Even follow-ups of PrEP, they are reluctant to see those patients"* (FG4, R7).

"They will be referring the patient to us as Aurum staff. They won't be initiating PrEP from the word go. They'll be kind of reluctant to initiate PrEP" (FG4, R7).

Integrating PrEP adds some responsibilities to already overburdened staff, including counselling, follow-up visits, lab monitoring and documentation (Eakle et al., 2018).

Comments from participants supporting the statement: *"So, their thing is, we are always introducing new things, making them to work. We are adding workload in their work"* (FG4, R5).

"Aurum staff is always coming up with more work on our work" (FG4, R5).

The participants raised a concern about the message to be given to clients/patients. *"I think it just depends on how we are able to drive that conversation. But usually the end point, we also don't know how to go about it. That's the tricky part"* (FG4, R5).

"We are not actually giving standard information. We're not uniform in our approach as far as PrEP and ART is concerned" (FG4, R1).

5.3.5.3 Medicine shortage

Health care providers often face medicine-related challenges that hinder the integration of PrEP into primary health care services. These include the availability of PrEP, shortage of stock, and supply chain inconsistencies, as stated by one of the participants (Hodges-Mameletzis et al., 2020). *"I think it was two or three weeks back we didn't have stock, so some patients had to be returned because we didn't have any medication in stock"* (FG1, R2).

5.3.5.4 Patient-related aspects

Patient reluctance is a key barrier to successfully integrating PrEP into primary health care services. Many people who could benefit from PrEP may be hesitant to accept or seek PrEP medication due to stigma, fear of being judged, or concerns about being labelled HIV positive (Golub, 2018).

Quotes from participants supporting the statement are: "*People are reluctant because of when you explain that it is ARV's, just the person, just change their mind*" (FG3 R1).

"They have been testing negative with their current partners that are positive. So, you are giving me this tablet telling me that it is supposed to protect me from HIV but yet you are telling me to use a condom" (FG4 R2).

"They don't like to take tablets. Especially when they feel that, I'm HIV negative, or I'm married to this guy" (FG4 R4).

5.3.6 Theme five: Recommendations

Integrating pre-exposure prophylaxis (PrEP) into primary healthcare systems represents a foundational strategy in scaling up comprehensive HIV prevention. Successful implementation demands a coordinated alignment with existing health infrastructure,

compliance with systems/guidelines, staff training, medication prescribing, the role of counsellors, and sufficient resources. As the World Health Organization (2017) underscores, harmonizing PrEP services with national health systems is essential to ensure sustainable and equitable access.

5.3.6.1 Compliance to systems/guidelines

Ensuring strong compliance with established systems and clinical guidelines is essential for effectively integrating PrEP into primary health care services. Standardised protocols help guide health care providers through PrEP initiation, monitoring, and follow-up, promoting consistency and quality of care. Regular training, supportive supervision, and easy access to up-to-date guidelines empower staff to confidently deliver PrEP services. By reinforcing compliance at all levels, health facilities can streamline PrEP integration, reduce service gaps, and enhance overall program effectiveness (WHO, 2022).

The statements below from participants underscore the need for compliance with established systems and guidelines: *"So maybe before we integrate it to the PHC setting, we need to ensure that we have strong HDS counsellors. They follow the Rapid Test Continuous Quality Improvement (RT-CQI) approach, effectively"* (FG4, R1).

"IQC should be performed once a week. Monday, every Monday. When the lot number changes, when you receive new stock" (FG4, R1).

5.3.6.2 Staff training

Effective integration of PrEP into primary health care services relies heavily on well-informed and confident health care workers (Muwonge, 2020). The participants emphasised that training health care providers is essential to ensure they have the knowledge, skills, and attitudes to confidently offer PrEP services.

One participant emphasized that integrating PrEP services into training will equip frontline workers to confidently promote and provide the service: *"On the current students that are doing D4, here at our college. So that when they finish, they know about PrEP, and they are able to implement it well".* (FG4, R7)

Few other participants added by saying: *"He is actually raising a very valid point. Before we can even integrate PrEP into their studies, we actually need to include NIMART courses"* (FG4, R1).

Other participants commented that integrating PrEP services into staff training programs will equip them with the knowledge and skills necessary to educate, assess PrEP eligibility and provide or refer for PrEP services. *"The training is being done … but they will just take one professional nurse and then when you come you give the feedback and if they could maybe bring somebody down here to come and do the training to all professional nurses"* (FG2, R2*).*

"It means that staff members in the primary health care facilities must then be trained so that they are equipped to give out proper information to the community" (FG1, R2*).*

5.3.6.3 Prescribing

The participant emphasised that to ensure timely and accessible PrEP services, it is critical to enable appropriately trained professional nurses to prescribe PrEP within primary health care settings. *"In an ideal situation it should be NIMART trained but in reality, that's not the case"* (FG4, R1).

5.3.6.4 Counsellors

Counsellors play a vital role in the successful integration of PrEP by supporting client education, risk assessment, adherence, and psychosocial well-being. As members of the health care team, they help create a client-centered environment that encourages open

communication and informed decision-making therefore the need to be well prepared and trained for their responsibilities (Giovenco et al., 2021).

One participant supported this statement by emphasizing the training of counsellors: *"They need to be trained and fast-tracked so that they are ahead of their client"* (FG4, R6).

5.3.6.5 Sufficient resources

Ensuring a consistent and uninterrupted supply of PrEP medication emerged as a critical factor for successful integration, with stockouts posing a significant challenge.

One participant raised a concern that stockouts disrupt continuity of care and can discourage clients from initiating PrEP by explaining: *"We had to place an emergency order and then tell the patient to come back or we ask other facilities"* (FG1, R1).

5.4 DISCUSSION

5.4.1 Theme One: PrEP Awareness Strategies

The findings of this study are consistent with the existing literature (Noar et al., 2009; Irungu, Koza, and Velloza., 2021; Arnold et al., 2012), which underscores the necessity of multifaceted strategies to enhance PrEP awareness and uptake. Like the respondents in this study, Noar et al. (2009) in a USA based study, highlight the effectiveness of mass media interventions in reaching large audiences, reducing HIV-related stigma, and promoting preventive behaviours. Similarly, Irungu, Koza, and Velloza (2021) in a Kenya based study stress the importance of tailored, multi-level interventions to address the complex barriers to PrEP use, particularly among adolescent girls and young women (AGYW). Arnold et al. (2012) in study conducted in California, USA, further support this view, noting that public health providers recognize the value of community-focused education to inform individuals about PrEP and its availability. The participants' emphasis on diverse media platforms such as radio, TV, pamphlets, and social media, mirrors

previous studies that highlight the adaptability of media campaigns in targeting various demographic groups with customized messaging.

As the World Health Organization (2017) underscores, harmonizing PrEP services with national health systems is essential to ensure sustainable and equitable word access. Campaigns and outreach were also highlighted as essential in this study, reinforcing the observations of Friedman et al. (2016), who pointed out that community-based campaigns effectively bring information to hard-to-reach populations and foster a sense of collective responsibility toward HIV prevention. This aligns with findings of a USA study by Dubov et al. (2018), who emphasized the role of targeted, community-informed outreach in increasing PrEP uptake among marginalized groups.

Pettifor et al. (2018), in a study conducted in South Africa, aimed to evaluate the impact of community mobilization on HIV prevention behaviours, further demonstrated that community mobilization efforts could successfully shift social norms around HIV prevention behaviours. Additionally, the participants in the current study placed particular emphasis on face-to-face engagement through pamphlet distribution during campaigns, suggesting a preference for personal interaction, which contrasts with trends noted by Whiteley et al. (2020) and Mitchell, Torres and Pinchon, (2021) in a study done in the USA. The authors argue that digital outreach methods such as social media and mobile health (mHealth) apps are increasingly supplanting traditional in-person strategies, especially among younger audiences.

Finally, the current study's findings on the importance of referral systems are consistent with a USA' study by Calabrese, Krakower, and Mayer. (2017), who emphasized that connecting individuals to services is a critical step from awareness to action. Similarly, Nunn et al. (2017) in a USA study, stressed the significance of integrated referral networks in facilitating PrEP uptake, particularly among populations experiencing systemic healthcare barriers.

Drawing on broader HIV prevention frameworks, Philbin et al. (2018) emphasized the importance of strong provider-patient relationships and informal service linkages in care engagement. While literature often focuses on formal referral systems, participants in this study described informal, proactive referrals by frontline workers highlighting a grassroots approach also reflected in Doblecki-Lewis et al. (2023), which showed the effectiveness of community-based PrEP initiatives in reaching underserved groups through adaptable, context-driven referrals.

Overall, in line with other studies, the findings uniquely emphasize the involvement of all levels of health facility staff, highlights the continued importance of printed materials in campaigns, and underscores the proactive role of health workers in facilitating PrEP referrals.

5.4.2 Theme Two: Benefits of service integration

The study findings regarding the benefits of integrating PrEP services into primary healthcare settings are largely supported by existing literature (Grant et al., 2010; Baeten et al., 2012; McCormack et al., 2016; Koss et al., 2020; UNAIDS., 2020).

Instead focus on for example findings by Grant and Beaten and the others have confirmed the efficacy of PrEP in preventing HIV acquisition among high-risk populations when consistently used (Grant et al., 2010; Baeten et al., 2012). These findings are further supported by McCormack et al. (2016), whose results from the Pre-exposure prophylaxis to prevent the acquisition of HIV-1 infection (PROUD) study in United Kingdom highlighted the real-world effectiveness of PrEP in clinical settings. Additionally, Koss et al. (2020) emphasized the importance of combining PrEP with routine healthcare services to maximize impact, particularly in resource-limited settings in the study done in Kenya and Uganda. The integration of PrEP into primary healthcare settings aligns with UNAIDS (2020) recommendations to decentralize prevention services and bring them closer to communities, thereby increasing accessibility and uptake.

Stigma reduction was another important benefit identified by participants, consistent with findings by Ware et al. (2013) in Sub-Saharan Africa, who emphasised that normalization of HIV services through integration helps deconstruct the association between clinic visits and HIV-positive status. This is echoed by study in Kenya by Odeny et al. (2013), which found that offering HIV testing and treatment alongside other services significantly reduced stigma in community settings. Similarly, Wagner et al. (2023) in Kenya report that integrating PrEP into maternal and child health services normalized its use and increased acceptability among women.

While stigma is often discussed in relation to HIV-positive status (Mahajan et al., 2008; Turan et al., 2017), research shows that integrating PrEP into routine services can reduce stigma among HIV-negative individuals echoing Sundararajan et al. (2022) in Kenya, who recommended expanding eligibility beyond priority populations and framing PrEP as part of general health care. These approaches aim to normalize PrEP use, mitigate stigma, and subsequently enhance both uptake and adherence.

Regarding operational efficiency, the finding that integration reduces patient waiting times and clinic visits is consistent with the work of Tucker and Singer, (2015), who found that service integration in the USA enhance patient satisfaction and clinic throughput. Similarly, the perceived reduction in provider workload due to service streamlining echoes findings by Lia et al. (2014), who highlighted how integrated service delivery models can improve provider efficiency and optimize human resources in low-resource settings. This is further supported by study such as that by Birdthistle et al. (2014), which demonstrated that integrated HIV and maternal health services significantly reduced wait times and improved service delivery in Swaziland.

Nevertheless, some literature also warns of challenges with integration, such as potential staff burnout or diluted focus on specific services (Dudley and Garner, 2012; Maruthappu, Hasan and Zeltner, 2015; Mutemwa et al., 2017). These concerns were not raised by the participants in this study, suggesting either effective implementation or a focus on anticipated benefits over drawbacks. This contrast presents an opportunity for further

investigation into the long-term sustainability and resource demands of integrated PrEP service models, as highlighted by previous work in multi-country study emphasizing the need for further research on the effects of integrating HIV services into broader health systems and the economic impacts of integration (Bulstra et al., 2021).

Overall, the present findings reinforce existing evidence on the benefits of PrEP integration while offering fresh insights, particularly into stigma reduction and workload distribution. They contribute to the growing consensus that a well-integrated, patient-centered model is critical for achieving effective HIV prevention outcomes.

5.4.3 Theme Three: Facilitators of PrEP Service Integration

The facilitators identified in the current study are patient health-seeking behaviour, partner support, and youth-friendly services. The three identified facilitating factors align with existing literature on the integration of PrEP services and underscore the importance of a multifaceted approach to HIV prevention (Agofure. 2013; Shisana et al., 2014; Bello et al., 2024; Shisana et al., 2014; Heaney and Israel. 2008; Smith et al., 2018; Vijayakumar et al., 2020). These facilitators are pivotal in enhancing the accessibility, uptake, and long-term success of PrEP programs.

The role of patient health-seeking behaviour in PrEP adherence is well-supported by the literature (Agofure. 2013; Shisana et al. 2014; Bello et al. 2024). Studies done in Nigeria by Agofure (2013) and in South Africa by Shisana et al., (2014) confirm that an individual's health-seeking behaviour is critical in their engagement with HIV prevention services. These studies emphasize that individuals who actively seek out healthcare and adhere to prescribed regimens are more likely to benefit from interventions like PrEP. The findings in this study, which highlight patient compliance and regular follow-up as key to successful PrEP integration, align with this view. Moreover, the study's acknowledgment of barriers such as limited access due to partner involvement is consistent with secondary data analysis done in Nigeria on the challenges in ensuring sustained PrEP usage, particularly for individuals whose access to healthcare is influenced by their partners' behaviour or availability (Bello et al., 2024). This finding suggests that addressing

relationship dynamics and ensuring comprehensive support can improve PrEP adherence.

The importance of partner support in PrEP adherence has been explored in several studies (Heaney and Israel. 2008; Smith et al., 2018; Vijayakumar et al., 2020). Heaney and Israel (2008) suggest that social support, especially from intimate partners, significantly influences health outcomes, including HIV prevention efforts. Studies in Sub-Saharan Africa have shown that when couples are involved in PrEP services together, there is higher adherence and reduced risk of transmission (Smith et al., 2018). This mirrors the findings in the study, where respondents emphasized that partner support is a critical facilitator of PrEP integration. By fostering an environment of shared responsibility, individuals are more likely to begin and sustain PrEP use. Integrating partner support into service delivery, as the study suggests, aligns with a growing body of literature recommending couple-based counselling and interventions in HIV prevention programs (Vijayakumar et al., 2020).

The role of youth-friendly services in facilitating PrEP uptake, particularly among adolescents, is also well documented in the literature (WHO, 2012; Matambanadzo et al., 2020, Chersich et al., 2016, Bekker et al., 2015, Hosek et al., 2015). The World Health Organization, (2012) and Matambanadzo et al., (2020) highlight that youth-friendly services are essential for reaching young people who are at higher risk of HIV but may face barriers related to stigma, confidentiality, and healthcare accessibility. The study's focus on providing non-judgmental, confidential, and tailored services for youth echoes the findings of Chersich et al., (2016) in the study conducted in South Africa, who found that when HIV services are youth-centered and approachable, young people are more likely to engage with them. Furthermore, Bekker, (2015) in study also conducted in South Africa emphasised that youth-friendly services should be designed to be accessible, acceptable, and appropriate for young people, ensuring that they feel comfortable and supported in seeking HIV prevention options. Additionally, in their 2015 study, Hosek et al., (2015) also emphasised the critical role of youth-friendly services in facilitating the uptake of HIV PrEP among adolescents in the study conducted in the USA. By offering

these services in a supportive and age-appropriate manner, healthcare systems can reduce barriers and improve engagement with PrEP, especially among young people who may be particularly vulnerable to HIV.

5.4.4 Theme Four: Barriers of PrEP service integration

The integration of PrEP into primary healthcare services presents a promising strategy for reducing HIV transmission risks, but several barriers remain that can hinder its full potential (Pintye et al., 2020; Giovenco et al., 2021; Krakower and Meyer. 2016).

The current study highlights that service availability and accessibility are significant barriers to PrEP uptake, with participants mentioning issues like long waiting times and limited access to services on weekends. These challenges mirror findings from other studies, such as those by Pintye et al., (2020) in Kenya, who also pointed out that when services are not available at convenient times, individuals may be deterred from starting or continuing PrEP. Giovenco et al., (2021) in South Africa similarly found that limited-service hours and inconvenient clinic locations hindered access to HIV prevention services. Furthermore, Krakower and Mayer, (2016) in USA reported that delays in service availability can lead to disruptions in treatment and a decreased likelihood of maintaining long-term adherence.

Staff-related barriers, such as insufficient training, lack of confidence in administering PrEP, and increased workload, are echoed across multiple studies such as Blackstock et al., (2017) who found that healthcare providers often express scepticism about the efficacy of PrEP, while Dovel et al., (2021) identified inadequate staff training as a major barrier to successful PrEP implementation. Eakle et al., (2018) also noted that increased workload due to the addition of PrEP-related tasks can contribute to staff burnout, similar to the findings in this study. Additionally, the reluctance of staff to initiate PrEP, as observed in this study, aligns with Smith et al., (2018), who found that stigma and discomfort in discussing HIV prevention contribute to healthcare provider hesitancy.

Medicine-related barriers, particularly stockouts and disruptions within supply chains, have been consistently identified as major impediments to the integration of PrEP services. Numerous studies underscore that interruptions in PrEP availability lead not only to gaps in patient care but also erode patient trust and adherence. For instance, Mugo et al., (2016) observed that PrEP supply interruptions often cause patients to discontinue use, citing a loss of confidence in the healthcare system. Similarly, Willie (2024) emphasized that improving supply chain management through decentralized distribution networks could mitigate these recurrent stockouts, thereby enhancing service delivery and patient outcomes.

In Kenya, Evens et al. (2020) documented the critical impact of supply chain failures on the provision of integrated reproductive health and HIV services, noting that root causes of stockouts must be addressed to avoid service delivery interruptions. Further corroborating this, Heck et al. (2024) highlighted that supply chain costs and inefficiencies present major barriers to consistent PrEP availability. Additional research by Zia et al. (2024) specifically pointed to stockouts during integrated PrEP and post-abortion care services as critical missed opportunities for HIV prevention. Similar conclusions were reached by Hicks et al. (2023), who stressed that fragile supply networks critically threaten the readiness of maternal and child health services to deliver PrEP consistently. Moreover, Wagner et al. (2023) reported widespread provider concerns over persistent stockouts, impacting both service uptake and program sustainability. Finally, Gils et al. (2018) illustrated how stockouts of HIV commodities in Kinshasa significantly hampered progress towards epidemic control, reinforcing the necessity for robust supply chain systems in any preventive intervention.

Patient-related barriers to PrEP uptake are deeply rooted in social stigma, fear of judgment, and prevalent misconceptions about the drug’s purpose and efficacy. These issues are widely documented in the literature. Golub, (2018) emphasized that stigma particularly the association of PrEP with high-risk behaviours often deters individuals from initiating or continuing its use, as they fear being perceived as promiscuous or HIV-positive. Chersich et al. (2016) similarly noted that social and internalized stigma among

women and adolescents significantly hinders PrEP engagement, even when they are clinically eligible. More studies that are recent confirm and expand upon these concerns. Zhang, Chang and Liu, (2025) found that misinformation and lack of normalized, non-judgmental conversations around HIV prevention contribute to persistent misconceptions, thereby limiting demand for PrEP despite high need.

Furthermore, Wagner et al. (2023) observed that patients often distrust PrEP's effectiveness, especially when their partners have suppressed viral loads, leading them to perceive their own HIV risk as negligible. In another study, Zia et al. (2024) highlighted that PrEP uptake among women in post-abortion care was limited due to a combination of perceived stigma and disbelief in personal susceptibility to HIV. These findings mirror those from the present study, in which patient hesitancy particularly among women was attributed to scepticism over their HIV risk and uncertainty about the necessity of PrEP.

The findings from the current study and observations from the growing body of literature emphasize that while integrating pre-exposure prophylaxis (PrEP) into primary healthcare systems is a crucial strategy for HIV prevention, success hinges on effectively addressing several entrenched implementation barriers. These include issues of service accessibility, staffing capacity, drug supply continuity, and patient-level reluctance. For example, Nelson et al. (2024) found that integrating PrEP into antenatal and postnatal care is feasible but requires systemic support, such as harmonized clinical guidelines and infrastructure improvements. Zhang, Chang and Liu, (2025) highlighted how limited provider awareness and patient misconceptions hinder PrEP engagement, advocating for stigma-reduction campaigns and better health communication strategies. Yong et al. (2024) further reinforced that in Malaysia, the successful scale-up of PrEP demands a multifaceted approach involving training, supply chain stabilization, and culturally tailored outreach. These conclusions are echoed by Seid (2024), who emphasized that implementation strategies must address barriers on multiple levels from pharmacy-based access to community-led awareness.

Effective integration, therefore, calls for coordinated efforts that strengthen healthcare delivery, empower frontline staff through training, secure consistent PrEP availability, and normalize HIV prevention through community education. Effective alignment of these components may significantly enhance both the uptake and sustained adherence to PrEP, ultimately contributing to a substantial reduction in HIV transmission.

5.4.5 Theme Five: Recommendations for PrEP service integration

Integrating pre-exposure prophylaxis (PrEP) into primary healthcare systems represents a pivotal advancement in HIV prevention, but its success relies on addressing multiple operational challenges. These include strict adherence to clinical protocols, robust training for healthcare workers, expanded prescribing authority, counsellor support, and a dependable PrEP supply chain. The study's findings strongly align with global implementation literature, for example, Baron et al. (2024) who documented barriers in service co-location and resource constraints in adolescent-focused care and Castor et al. (2023) also highlighted how non-HIV service integration must be addressed to expand long-acting PrEP delivery in low- and middle-income countries, underscoring the importance of a holistic, systems-based approach for effective PrEP rollout.

Clinical compliance and quality assurance are foundational for maintaining service consistency and client trust. WHO (2022) and Pintye et al. (2020) emphasize that lacking standard protocols such as internal quality controls and RT-CQI mechanisms can lead to fragmented care and inconsistent service delivery. Harrison et al. (2024) further argue that clear prescribing guidelines and streamlined clinical workflows are essential for ensuring safe and equitable PrEP access in diverse health settings.

Healthcare provider training remains a critical barrier. This current study found that when only select individuals receive PrEP-specific education, service inconsistency increases. Blackstock et al. (2017) advocate for broad-based, curriculum-integrated training programs to build system-wide competency. Similarly, Nelson et al. (2024) observed that

clinics offering regular in-service training experienced higher PrEP initiation and retention rates.

The ability of trained nurses especially those certified under programs like NIMART to prescribe PrEP is an urgent operational gap. Vanhamel et al. (2020) suggest that rigid prescribing hierarchies impede service flow and discourage task-shifting models essential for decentralizing HIV prevention.

Counsellors play an equally vital role. This study highlights that counsellors are not just adherence supporters but also key agents in destigmatizing PrEP through education. Giovenco et al. (2021) and Saxton et al. (2018) confirm that when counsellors are well-trained and engaged, client comfort and PrEP continuation increase substantially.

Reliable medication supply is the backbone of any PrEP program. Interruptions caused by stockouts undermine program integrity and reduce patient confidence. Nelson et al. (2024) and Nakambale et al. (2023) recommend integrated procurement systems and decentralized distribution as key solutions to strengthen supply chains.

5.5 SUMMARY

This chapter presented the study's qualitative findings and the discussion, shedding light on the perceptions, and challenges health care providers face. Through thematic analysis of focus group discussions, five overarching themes were identified: PrEP awareness strategies, Benefits of service integration, Facilitators of PrEP service integration, barriers, and recommendations. The respondents' narratives underscore the critical role of PrEP awareness and training in fostering integration of PrEP into primary health care services.

The next chapter will present a summary of the study and address the limitations, recommendations, and the conclusion.

CHAPTER SIX

SUMMARY OF THE STUDY, LIMITATIONS, RECOMMENDATIONS AND CONCLUSION

6.1 INTRODUCTION

This chapter summarizes the study research process, primary findings, implications, and applicable limitations. The chapter concludes with recommendations for nursing practice, education, management, future research, and a summary of the thesis.

6.2 SUMMARY OF THE STUDY

6.2.1 Purpose of the Study

This study's purpose was to explore the factors that should be considered when integrating HIV PrEP into primary health care services.

6.2.2 Objectives

The objectives of this study were to:

- Review existing literature on factors to consider for integrating HIV PrEP into primary health care services (Phase 1).
- Explore and describe the nurses' perceptions of HIV PrEP integration into primary health care services (Phase 2).

6.2.3 Methodology

This study's objectives were met by using a sequential exploratory multimethod design. The study was conducted in two phases. In Phase 1, a scoping review of literature on factors to consider for integrating HIV PrEP into primary health care services was

conducted to address the first objective. The JBI framework guided the scoping review. Five databases were searched, and fifteen studies were included in the review. Data from phase 1 was mapped out and described.

In Phase 2, a qualitative exploratory descriptive design was used. Four FGDs were conducted with a sample of (N=30) PHC nurses. Purposive sampling was used to select the participants from four Community Health centres in Matlosana. An interview guide with open-ended questions was used to collect data. Thematic analysis was used to analyse the data.

Before commencing with data collection, ethical clearance was obtained from the Human Research Ethics Committee of the University of the Witwatersrand. Permission to conduct the study was obtained from the North West Department of Health, the facility managers of four CHCs and the participants.

6.3 SUMMARY OF MAIN FINDINGS AND INTERPRETATION

This summary highlights the key findings from data analysis, along with their interpretations, to provide an understanding of what the data reveal and the meaning in the context of this study**.**

The two phases of this study included a scoping review of existing literature and a qualitative study of primary health care nurses' perceptions. The scoping review mapped out global evidence, identifying a comprehensive list of fourteen facilitators and twenty-nine barriers categorized at the provider and client levels. Key provider-level facilitators include training, system support, effective communication, and strategic implementation approaches like stakeholder engagement and addressing stigma. Corresponding barriers at this level involve resource limitations (staff, supplies, infrastructure), insufficient knowledge and confidence, negative attitudes (including stigma), and systemic issues like heavy workload and poor record-keeping. At the client level, facilitators encompass knowledge, perceived risk, supportive service environments, community acceptance, and

social support. Client barriers are significantly driven by stigma, lack of accurate information, concerns about side effects, mobility challenges, and broader structural inequities like poverty and limited access. The review concludes that these multifaceted barriers must be robustly addressed while integration is feasible.

The qualitative study provided a contextual perception from PHC nurses in Matlosana, North West Province. The findings revealed that PrEP awareness is the central theme, seen as fundamental and requiring diverse strategies (media, various educators, campaigns, referrals). Nurses identified key integration benefits for patients (reduced transmission, reduced stigma) and providers (reduced workload).

Facilitators highlighted by nurses include positive patient health-seeking behaviour (compliance), partner support, and youth-friendly services. The nurses articulated several barriers, many mirroring those in the literature: issues with service availability (waiting times, limited hours), staff-related challenges (competency, lack of confidence, reluctance, communication gaps), medicine shortages (stockouts), and patient reluctance (driven by stigma, misinformation, and perceived lack of need). Based on these insights, nurses offered practical recommendations emphasizing compliance with guidelines, comprehensive staff training (including prescribing and counselling), ensuring sufficient resources (especially medication stock), and improving service accessibility.

In summary, the scoping review and qualitative findings underscore the feasibility and potential benefits of integrating PrEP into PHC, particularly in reducing transmission and stigma. However, both also converge on a critical set of challenges. The literature review provides a broad, evidence-based overview of these factors globally. At the same time, the qualitative study offers a deep, contextualized understanding of how frontline nurses experience these issues in the study setting. The findings consistently highlight the paramount importance of adequate resources, comprehensive training and support for providers, overcoming stigma at all levels, ensuring consistent medication supply, and implementing targeted, culturally appropriate awareness campaigns to empower providers and clients and ultimately achieve successful and equitable PrEP integration.

This table 6.1 compares the key themes and findings from the scoping review of existing literature with the perceptions of primary health care nurses in the Matlosana sub-district highlighting areas of convergence and divergence.

6.1 Comparison of key themes and findings

Area of comparison	Scoping review findings	Qualitative findings	Interpretation/alignment
Overall feasibility	Integration is feasible but requires robust addressing of barriers.	Integration is seen as a necessary and potentially beneficial opportunity.	Both sources agree that integration is possible and desirable but acknowledge the need to overcome challenges.
Key Facilitators	Training enhances knowledge, reduces hesitancy, and improves uptake. In low-resource settings, task-shifting and digital training are key	Participants emphasized the need for standardized, continuous training to sustain integration and improve provider confidence	Alignment with global evidence. The study adds emphasis on training's role in long-term sustainability and workload redistribution, not just uptake.
	Integration normalizes HIV services, reducing stigma. Most literature focuses on stigma related to HIV-positive identity.	Participants highlighted stigma reduction for HIV-negative PrEP users when integrated into routine services.	Literature focuses on HIV-positive stigma, while the study adds new evidence on stigma among HIV-negative users broadening the stigma discourse.

	Clinical trials show high efficacy when used consistently. Real-world integration in Kenya/Uganda enhances uptake recommends decentralization.	Participants recognized PrEP's effectiveness and viewed integration into primary care as a facilitator for access and continuity.	The study confirms evidence on efficacy but adds operational insights (reduced wait times, workload distribution) less emphasized in trials.
	Integration improves satisfaction, reduces wait times, and increases throughput. Risks include staff burnout and diluted focus.	Participants perceived reduced clinic visits, shorter waiting times, and lighter provider workload. No mention of burnout or negative effects.	Convergence on efficiency benefits. Divergence where literature warns of risks, but participants reported none — possibly due to short study horizon or effective implementation.
	Confidential, client-friendly, nonjudgmental services improve uptake	Participants reported integration into primary healthcare improved access, reduced wait times, and made PrEP delivery more acceptable	Convergence: Both emphasize accessible, supportive environments. Divergence: Literature highlights staff attitude/confidentiality, while participants focused more on efficiency gains and convenience
Importance of Awareness	Client knowledge and awareness are key facilitators.	PrEP awareness is fundamental and multi-dimensional. Theme 1 focuses entirely on awareness strategies.	While the literature recognizes awareness as important, the qualitative data positions it as the central underlying issue that influences many other factors.

Role of Stigma	Peer-led outreach, community campaigns, and social support normalize PrEP and reduce stigma.	Integration into maternal/child health and general services normalized use and reduced stigma.	Convergence: Both highlight normalization as stigma-reducing. Divergence: Literature stresses peer/community mechanisms, while participants saw normalization through service integration.
Recommendations	Investment in resources Training, workflow redesign, policy development. Community engagement, tailored education, and structural support.	Compliance with systems or guidelines, Staff training (counsellors, prescribing). Resources (stock). Counsellor support.	The nurses' recommendations directly address the barriers they experience, aligning well with the broader strategies suggested by the literature. The nurses' recommendations are highly practical and focused on immediate operational needs.
Specific Contextual Issues	Literature covers diverse global contexts (USA, Kenya, South Africa,	Specific to PHC nurses in Matlosana sub-district, North West Province, South Africa.	Chapter 4 provides a broad overview of global findings. Chapter 5 grounds these findings in the specific realities and perceptions of healthcare providers in a particular local setting, adding valuable contextual depth.

6.4 APPLICATION OF THEORY TO THE FINDINGS

Integrating PrEP services into primary health care systems is a critical strategy for expanding access and improving HIV prevention outcomes. To systematically assess how well this integration works in real-world settings, we applied the RE-AIM framework, which examines Reach, Effectiveness, Adoption, Implementation, and Maintenance (Glasgow et al., 2019). This approach allows us to map key findings onto each framework domain highlighting the facilitators that support successful integration and the barriers that may hinder long-term impact.

Table 6.2 Application of RE-AIM theory

RE-AIM Component	Facilitators	Barriers
Reach: The extent to which the intervention reaches the target population, especially marginalised or underserved groups	Peer-led outreach and mobile services extend access to rural, mobile, and LGBTQ+ clients.	Stigma, fear of disclosure, and misinformation limit participation, particularly among women, LGBTQ+, and low-literacy groups.
		Patient reluctance due to stigma/misinformation.
	Client-friendly and supportive environments increase initial engagement.	Long wait times and limited-service hours reduce accessibility.
	Mass media and community health workers broaden awareness.	Mobility challenges and broader structural inequities (e.g., poverty) limit access Perceived lack of need by potential clients
Effectiveness: The intervention's impact on desired outcomes (e.g. uptake, adherence, HIV prevention).	Culturally tailored and effective communication improves decision-making and promotes adherence.	Misunderstanding of PrEP's purpose, concerns about side effects, and dislike of pills lead to early discontinuation.

	Integrated primary care services enhance retention and reduce stigma.	Provider stigma, provider lack of confidence and weak counselling reduce initiation and adherence.
	Peer, couple-based and partner support systems foster long-term engagement and adherence.	Burnout and fragmented systems lower service quality and impact adherence.
	Positive patient health-seeking behaviour (compliance) supports adherence.	Insufficient provider knowledge impacts the quality of counselling and support.
Adoption: The uptake of the intervention by staff, systems, and institutions	Strong leadership, clear policies, and infrastructure encourage adoption.	Lack of clear protocols and insufficient training limits staff readiness and confidence.
	Regular training builds provider confidence and readiness.	High workload, workflow disruption and policy ambiguity hinder routine integration
	Inclusive engagement of all cadres, including non-clinical staff, broadens adoption.	Staff reluctance and negative attitudes (including stigma) limit uptake by providers.
	Compliance with guidelines and systems supports routine integration	Poor record-keeping complicates tracking and integration.
Implementation: The consistency and quality of intervention delivery, including context adaptation	Task-shifting, digital learning, and clear protocols support standardized delivery.	Supply chain disruptions and medicine shortages affect delivery consistency.
	Mobile outreach and flexible models ensure accessibility for underserved groups.	Weak integration with broader health services hinders the depth and

		coordination of implementation.
	Community-led and system-level stigma-reduction activities improve fidelity and quality.	Lack of supervision affects delivery consistency.
	Ensuring sufficient resources, especially medication stock, is crucial for consistent delivery	Resource limitations (time, space, labs) impact quality and consistency
Maintenance: The sustainability of the intervention over time at both the individual and organisational levels	Expanding roles for nurses and counsellors strengthens workforce stability.	Structural barriers (e.g., stockouts, facility gaps, transport) threaten program continuity.
	Inclusive, welcoming environments sustain client engagement and retention.	Inconsistent funding and policy ambiguity undermine sustainability.
	Ongoing training and community partnerships promote long-term integration and support.	High workload and staff burnout challenge long-term workforce stability.
	Consistent policy support and investment in resources are vital for program continuity.	

6.5 LIMITATIONS OF THE STUDY

- **Scoping review**

This scoping review served as an exploratory investigation based on an analysis of 15 selected studies from which key conclusions were drawn. Although these studies formed the foundation for the review's findings, numerous studies were excluded for various reasons, as detailed in the PRISMA-ScR flow diagram (Figure 4-1). The review focused on recent literature published between 2012 and 2022 that aligned closely with the study's

objectives; thus, excluded studies were deemed irrelevant to these aims. A notable limitation of this review is the potential exclusion of significant insights presented in non-English publications, as only English-language articles were included. The choice of a scoping review over a systematic review meant that a formal quality assessment of included studies was not undertaken. However, this approach enabled the inclusion of a broader range of literature, including non-peer-reviewed sources, thereby enhancing the breadth of perspectives on the integration of PrEP into primary healthcare services. It is essential to acknowledge that a large proportion of the included studies originated from South Africa and Kenya, which may limit the generalisability of the findings to other contexts.

- **Qualitative component**

The limitation of the study is that the study concentrated on the perceptions of professional nurses and excluded other categories like medical officers and pharmacists who could have added to the body of knowledge. More categories of health care providers could have been included. Some of the professional nurses at the CHC clinics volunteered to participate in the research study but were other professional nurses that chose not to be part of the research for their unknown reasons. Valuable information could have been received from those staff who chose not to participate in the study. However, there was sufficient information received from CHC professional nurses who chose to participate in the study.

6.6 RECOMMENDATIONS ARISING FROM THE STUDY

The recommendations emanate from the combined findings summarized in Table 6.1 and application of the RE-AIM. They are organized and discussed across three key areas: clinical practice, education, and future research.

6.6.1 Recommendations for Clinical Practice

This study emphasizes that the successful integration of PrEP into primary health care services relies heavily on strengthening clinical practice. It is not enough to make the medication available also healthcare providers must be equipped through regular, structured training, clear clinical protocols, and ongoing support to deliver safe, patient-centered care. Effective PrEP delivery requires consistent communication, stigma-free interactions, and strong referral systems embedded into routine clinical workflows. Tailoring services to meet the needs of young people, LGBTQ+ clients, and other key populations, while ensuring staff are confident and prepared, is essential. Strengthening these elements within daily clinical practice will enhance PrEP uptake, adherence, and overall impact in preventing HIV.

6.6.2 Recommendations for Education

The findings of this study underscore the critical role of formal education and structured training in the effective delivery and uptake of PrEP services within primary healthcare settings. To ensure PrEP is widely understood, accepted, and consistently used, PrEP-related education must be integrated into the formal training curricula of healthcare professionals at all levels. This includes not only doctors and nurses but also counsellors, community health workers, and relevant non-clinical staff. Education must go beyond technical knowledge to include skills in patient communication, stigma reduction, and culturally competent care particularly for key populations such as adolescents, LGBTQ+ individuals, and sex workers. In parallel, public education efforts should be designed to complement formal health education, utilising clear and accessible messaging delivered through both traditional and digital platforms. Importantly, formal training programs should be supported by practical, on-the-job learning, mentorship, and routine updates to maintain provider competence. Strengthening formal education pathways will help build a more knowledgeable, confident, and responsive workforce, ultimately contributing to more effective and equitable PrEP service integration.

6.6.3 Recommendation for Future Research

This study reinforces that while PrEP is a powerful tool for HIV prevention, its full potential is limited by ongoing gaps in clinical practice, system readiness, and community-level engagement. Future research should move beyond identifying challenges and testing practical, context-specific solutions. Key priorities include evaluating the long-term effectiveness of provider training, especially in low-resource settings, and understanding the role of non-clinical staff and peer educators in expanding PrEP awareness. Research should also assess how integrated care models, workflow redesigns, and informal referral systems affect service delivery and patient follow-up. Special attention must be given to underserved groups like transgender individuals, sex workers, and people who inject drugs, with studies designed to explore their unique barriers and preferences. Additionally, the impact of stigma-reduction efforts, both within health facilities and communities, requires rigorous evaluation. Finally, operational research into supply chain stability and the cost-effectiveness of scaling up PrEP services is essential for long-term sustainability. Together, these research areas can inform more equitable, resilient, and responsive HIV prevention strategies.

6.7 CONCLUSION

Effective integration of HIV Pre-Exposure Prophylaxis (PrEP) into primary health care (PHC) services is critical for achieving significant reductions in HIV incidence. However, progress in incorporating PrEP within PHC services remains insufficient. This dissertation serves as an exploratory study to identify key factors and barriers that must be addressed to support the integration of PrEP into PHC systems.

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APPROVAL OF TITLE **APPENDIX A**

UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG

Private Bag 3 Wits, 2050
Fax: 027117172119
Tel: 02711 7172076

Reference: Mrs Sandra Benn
E-mail: sandra.benn@wits.ac.za

06 March 2023
Person No: 1580772
PAG

Mr JO Jonkane
2
Tugela Street
Randlespark
2571
South Africa

Dear Mr Josiah Jonkane

Master of Science in Nursing: Approval of Title

We have pleasure in advising that your proposal entitled *Factors that should be considered for integration of HIV pre-exposure prophylaxis into primary health services in North West Province, South Africa* has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

WITS HREC (MEDICAL) APPROVAL **APPENDIX B**

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG	HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

Office of the Deputy Vice-Chancellor (Research and Innovation)

TO: Mr JO Jonkane
School of Therapeutic Sciences
Department of Nursing Education
Medical School
University

E-mail: ojonkane@gmail.com

CC: Supervisor: Drs A Tshabalala and N Klaas
<Amme.Tshabalala@wits.ac.za>
and <HREC-Medical Research Office@wits.ac.za>

FROM: Mr Iain Burns
Human Research Ethics Committee (Medical)
Tel: 011 717 1252

E-mail: Iain.Burns@wits.ac.za

DATE: 2023/07/07

REF: R14/49

PROTOCOL NO: **M221157** (This is your ethics application reference number. Please quote it in all enquiries, oral or written, relating to this study.)

PROJECT TITLE: *Factors to be considered for integration of HIV Pre-Exposure Prophylaxis into primary health services in North West Province, South Africa*

Please find attached the Clearance Certificate for the above project. I hope it goes well and that an article in a recognized publication comes out of it. This will reflect well on your professional standing and contribute to Government funding of the University.



MSWorks2000/Iain0007/Clearscan.wps

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

R49 Mr JO Jonkane

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
CLEARANCE CERTIFICATE NO. M221157

NAME: (Principal Investigator)	Mr JO Jonkane
DEPARTMENT:	School of Therapeutic Sciences Department of Nursing Education Medical School University
PROJECT TITLE:	*Factors to be considered for integration of HIV Pre-Exposure Prophylaxis into primary health services in North West Province, South Africa*
DATE CONSIDERED:	2022/11/25
DECISION:	Approved unconditionally
CONDITIONS:	
NOTE:	If contact information regarding student study participants is required, please contact the Registrar's office - <Nicoleen.Potgieter@wits.ac.za>
SUPERVISOR:	Drs A Tshabalala and N Klaas
APPROVED BY:	CB Penny Dr CB Penny, Chairperson, HREC (Medical)
DATE OF APPROVAL:	2023/07/07 **EXPIRY DATE:** 2028/07/06

This Clearance Certificate is valid for 5 years from the date of approval. An extension may be applied for.

DECLARATION OF INVESTIGATORS

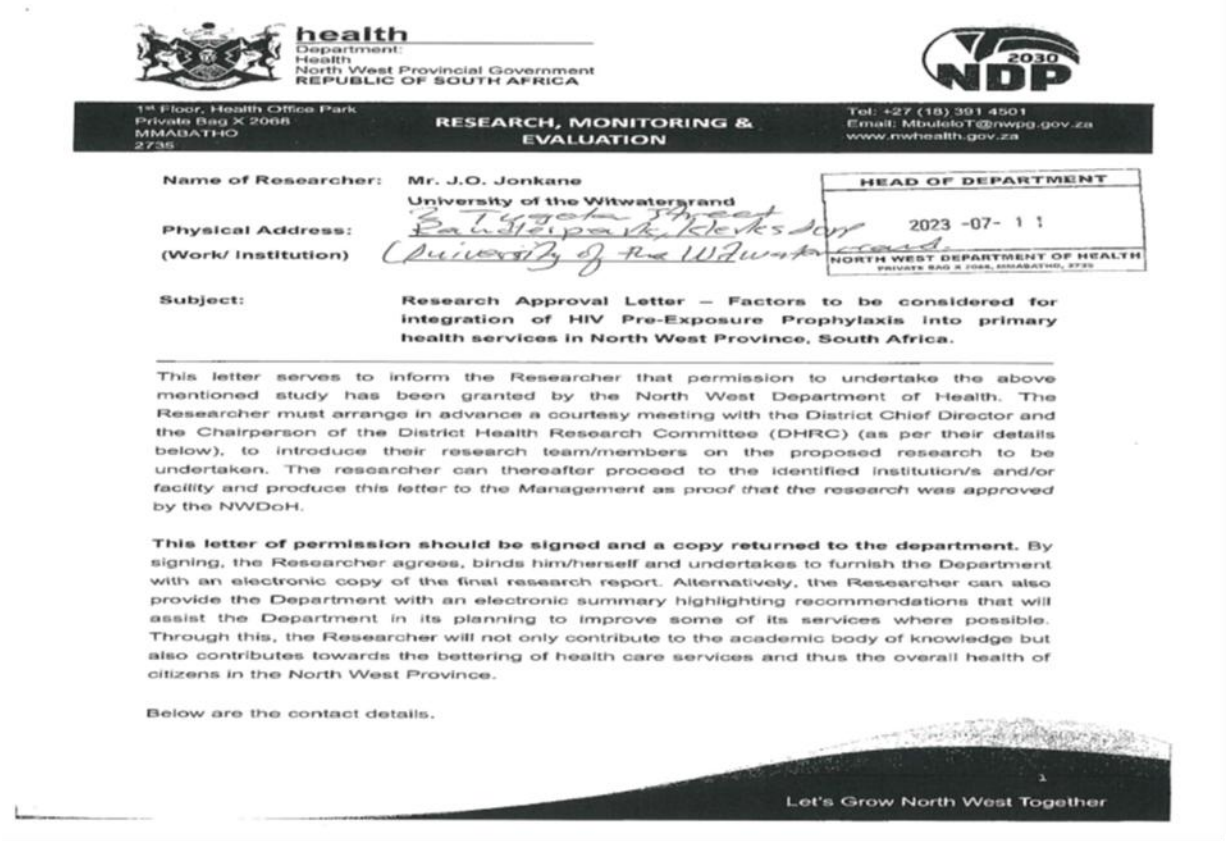
To be completed in duplicate and **ONE COPY** returned to the Research Office secretariat on the 3rd floor, Phillip Tobias Building, Parktown, University of the Witwatersrand, Johannesburg.

I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated from the research protocol as approved, I/we undertake to submit details to the Committee. **I agree to submit a yearly progress report**. When a funder requires annual re-certification, the application date will be one year after the date when the study was initially reviewed. In this case, the study was initially reviewed in **November** and therefore reports and re-certification will be due in the month of **November** each year. Unreported changes to the study may invalidate the clearance given by the HREC (Medical).

Signature of Principal Investigator

Date

NORTH WEST PROVINCE APPROVAL APPENDIX C



health
Department:
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RESEARCH, MONITORING & EVALUATION

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Name of Researcher: Mr. J.O. Jonkane
University of the Witwatersrand

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(Work/ Institution) University of the Witwatersrand

HEAD OF DEPARTMENT
2023 -07- 11
NORTH WEST DEPARTMENT OF HEALTH
PRIVATE BAG X 2068, MMABATHO, 2735

Subject: **Research Approval Letter – Factors to be considered for integration of HIV Pre-Exposure Prophylaxis into primary health services in North West Province, South Africa.**

This letter serves to inform the Researcher that permission to undertake the above mentioned study has been granted by the North West Department of Health. The Researcher must arrange in advance a courtesy meeting with the District Chief Director and the Chairperson of the District Health Research Committee (DHRC) (as per their details below), to introduce their research team/members on the proposed research to be undertaken. The researcher can thereafter proceed to the identified institution/s and/or facility and produce this letter to the Management as proof that the research was approved by the NWDoH.

This letter of permission should be signed and a copy returned to the department. By signing, the Researcher agrees, binds him/herself and undertakes to furnish the Department with an electronic copy of the final research report. Alternatively, the Researcher can also provide the Department with an electronic summary highlighting recommendations that will assist the Department in its planning to improve some of its services where possible. Through this, the Researcher will not only contribute to the academic body of knowledge but also contributes towards the bettering of health care services and thus the overall health of citizens in the North West Province.

Below are the contact details.

Office of the Chief Director: Dr Kenneth Kaunda District	Chairperson of the DHRC
Ms. Dineo Moromane	Dr C. Cachet
Contact person: Mr Calvin Mmisele 018 462 5744 CMmisele@nwpg.gov.za	clcachet@gmail.com

Kindest regards,

Dr. FRM Reichel
Director: RM&E
Date: 11 July 2023

Researcher
Date: 12 July 2023

MATLOSANA SUB-DISTRICT APPROVAL **APPENDIX D**

health
Department:
Health
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

2030 NDP

4th Floor, West End Building
Private Bag A2
Klerksdorp
2570

Dr. Kenneth Kaunda District

Tel: +27 (18) 462 5744
Email:imoloi@nwpg.gov.za
www.nwhealth.gov.za

To: **Mr. J.O. Jonkane**
University of the Witswatersrand

CC: **Sub District Managers**
Local Area Managers

From: **Mr. I. Moloi**
Director: DHS
Dr. Kenneth Kaunda District

Date: **1 April 2023**

Subject: **Research Approval for Factors that should be Considered for Integration of HIV Pre-Exposure Prophylaxis into Primary Health Services in North West Province, South Africa**

Dear Mr. Jonkane,

This correspondence bears reference.

Please note that as per the approval obtained from the Office of the Director: Policy, Planning, Research, Monitoring and Evaluation Directorate. Permission is hereby granted for you to access Health Facilities in Dr. Kenneth Kaunda District in conducting your research project.

It is expected of you to arrange in advance with the facility / operational managers and issue this letter together with approval from the Policy & Planning Directorate as proof of access the hospital to serve as your permission to conduct your research.

It is requested that provision of heath care services should not be compromised and prior arrangements should be made in order to avoid compromising the provision of health care services by health care providers to the community.

It is also requested that upon concluding your research project, a copy of your findings be availed to the District Management as well as the Provincial Office.

Sincerely,

Mr. I. Moloi
Director: DHS
Dr. Kenneth Kaunda District

NW DEPT. OF HEALTH
DR. KENNETH KAUNDA
PRIVAAT SAK/PRIVAATSAK A2
2023 -04- 01
KLERKSDORP 2570

STUDY INFORMATION SHEET **APPENDIX E**

Study Title: Factors to be considered for integration of HIV Pre-exposure prophylaxis into primary health care services in North West province, South Africa

Greetings: Hello Sir/Madam:

Introduction:

I am Olebogeng Jonkane, and I am a student at Witwatersrand University doing masters by dissertation in nursing science. As part of the course content, I am required to conduct research and submit a written document in order to complete the course successfully. I, therefore, will be doing a clinical study, which is not part of the routine care but intends to find out the barriers and enabling factors that should be considered for the integration of HIV PrEP into primary health care services in Matlosana, North-West Province. This study is envisaged that knowing this information may be beneficial in identifying possible barriers and enhancing factors to be considered for integration of HIV PrEP into primary health care services.

Invitation to Participate:

We are inviting you to take part in a research study. Should you agree to participate in this study you will be asked to sign a consent form to confirm your willingness to participate in the study and for the focus group discussion to be recorded. I will then make an appointment with you suitable to your needs to conduct a focus group discussion asking you to respond to questions related to barriers and enabling factors that should be considered for integration of HIV PrEP into primary health care services in Matlosana, North-West Province.

With your permission, I will audiotape the interviews for transcription and analysis.

Participation in the study is entirely voluntary and you may choose to not participate or to withdraw from the study at any time which will not affect you in any way. Anonymity and confidentiality will be ensured by using a code number instead of your name.

What is involved in the study. This could include but would not necessarily be limited to such features as:

1. The focus group discussion should take approximately 45 to 60 minutes of your time.

Risks of being involved in the study:

None

Benefits of being in the study:

There is no direct benefit to the participant. But you will benefit indirectly because the findings of this study will be shared with the CHC management upon request. The findings may contribute towards smooth integration and predicting barriers to the integration of the HIV PrEP services in the CHCs.

Participation is voluntary:

Participation in the study is entirely voluntary and you may choose to not participate or to withdraw from the study at any time which will not affect you in any way.

Reimbursements for "out of pocket" expenses:

Participants will be assisted with transport to the venue of the focus group.

Confidentiality:

Personal information will be treated in the strictest confidence and will only be available to the Principal Investigator (PI) and Supervisors. Code numbers will be used instead of names. The only exceptions - and all of them are rare - would normally be:

1. personal information may be disclosed if required by law.
2. the Human Research Ethics Committees of the University may exceptionally require personal data to respond to a formal complaint, or for a compliance audit.

If results are published, this may, exceptionally, lead to cohort, or more rarely, individual identification. All data collected in the course of the study will be securely retained for two (2) years, if a scientific publication arises from the study and six (6) years, if there is no publication. Thereafter it will be destroyed accordingly.

Anonymity:

Anonymity can not be guaranteed in focus group discussions however participants will be requested not to divulge others participation in this study.

Contact details of researcher/s:

Should you require additional information about this study and its procedures rights you are free to contact me in the Department of Nursing by telephone on 082 749 2882 or email at 1580772@students.wits.ac.za

Outputs:

The findings may contribute towards smooth integration and predicting barriers to the integration of the HIV PrEP services in the CHCs

Contact details of HREC administrator and chair:

This study has been approved by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg ("Committee"). A principal function of this Committee is to safeguard the rights and dignity of all human subjects who agree to participate in a research project and the integrity of the research.

If you have any concern over the way the study is being conducted, please contact the Chairperson of this Committee who is Professor Paul Ruff, who may be contacted on telephone number 011 717 2301, or by e-mail on pruff@iafrica.com. The telephone numbers for the Committee secretariat are 011 717 2700/1234 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

Thank you for reading this Study Information Sheet.

Date: December 2022

20180329

CONSENT FORM TO PARTICIPATE IN THE STUDY APPENDIX F

Study title: Factors to be considered for Integration of HIV Pre-exposure prophylaxis into Community Health Centre services in North West Province, South Africa

1. I have been given a Participant Information Sheet which explains the nature and processes involved in this study, participation will involve an interview that will be conducted at the boardroom of your hospital or any other venue that you would prefer.

2. I was given time to read it, or had it read to me, in the language I best understand.

3. I was given time to ask any questions I wanted to and found any answers given to me to be reasonable and satisfactory.

4. I fully understand why the study is being conducted and what the intended outcomes will be.

5. I understand that there will be no immediate benefit to me, should I agree to participate, nor will I receive any payment; conversely, participation will not cost me anything but my time.

6. I understand that, even if I initially consent to take part in the study, I may subsequently withdraw at any time and would not be required to give any reasons; if that happened, any data collected about me for the study would immediately be destroyed, unless I give consent for it to be retained

7. I have been given a range of contact details, listed below. If I require further information or become concerned about any aspect of this study, I am free to speak to any of these contacts.

8. I hereby give consent for myself…… (Name) to participate in the study.

Contact details:

Olebogeng Jonkane on 082 749 2882 or Email: 1580772@students.wits.ac.za (MSc Nursing Student).

Dr Amme Tshabalala (PhD). Supervisor, email: Amme.Tshabalala@wits.ac.za

Dr. Ntombifikile Klaas (PhD). Supervisor, email: fikile.klaas@wits.ac.za

Professor Paul Ruff, Chairperson of the Human Research Ethics Committee (Medical) at the University of Witwatersrand, on telephone no. 011 717 2301, or by e-mail at pruff@iafrica.com.

Ms. Z Ndlovu or Mr. Rhulani Mkansi, Committee Secretariat, telephone nos.: 011 717 2700 or 1234, or by e-mail at: Zanele.Ndlovu@wits.ac.za or Rhulani.Mkansi@wits.ac.za

Name of Participant: _____

Place: _____ Date: _____

Signature or mark: _____

CONSENT FORM FOR AUDIO RECORDING OF INTERVIEW APPENDIX G

Study title: Factors to be considered for Integration of HIV Pre-exposure prophylaxis into Community Health Centre services in North West Province, South Africa

I hereby consent to audio recording of the focus group discussion.

I understand that:

- The recording will be stored in a secure location (a locked cupboard or password protected computer) with restricted access to the researcher and the research supervisor.
- The recording will be transcribed and any information that could identify me will be removed,
- The recordings will be erased within either (a) two (2) years of the publication of the research findings, or (b) six (6) years, if no publications arise from this research
- Anyone wishing to access this information in the future will first have to obtain the approval of the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg
- Direct quotes from my interview, without any information that could identify me, may be cited in the research report or other write-ups of research and at future conferences.

Name of Participant: _____

Date: _____

Place: _____

Signature or mark _____

INTERVIEW GUIDE **APPENDIX G**

SECTION A: DEMOGRAPHIC PROFILE

Please select the appropriate answer below:

Gender:

Male	Female	Other

Age:

20-29	30-39	40-49	50-59	60-65

Highest level of education:

Undergraduate diploma/degree	Postgraduate diploma/degree	Master's degree	Doctorate

Work experience:

6 months to 1 year	2 to 5 years	6 to 10 years	11 to 15 years	16 to 20 years	>20 years

What is your current position? _____

Please tell me what integration of HIV PrEP into primary health care services means to you?"

GUIDING/ PROBING QUESTIONS

- What are the factors that should be taken into consideration for the integration of HIV PrEP into primary health care services?
- What are the factors that you think will enhance the process of integrating HIV PrEP into primary health care services?
- What are the factors that could possibly hinder the integration of HIV PrEP into primary health care services?
- Is there anything else that you would like to add?

Thank you for participating in this study!

TRANSCRIPT **APPENDIX I**

Factors to be considered for the integration of Pre-exposure prophylaxis into primary health care services in the Northwest Province, South Africa.

Moderator: Olebogeng Jonkane

Assistant Moderator: Keatlegile Motswenyane

Participants: Eight female Professional Nurses

Short briefing by the moderator

Thank you for taking time off from your busy schedule to participate in this focus group discussion. Firstly, we have provided you with an information sheet that will give you a brief overview of what the study is about and why we are conducting this focus group discussion. Secondly, a baseline demographics form has been provided as well as a consent form to take part in the study. Thirdly, an audio consent form is provided, which will prove that you have agreed to give consent to be audio recorded. Once we have signed all the forms, we may begin with the discussion with a few ground rules to be considered.

1. Preferably the discussion should be in English but if not possible then your home language can be used.
2. For audibility, let us not speak over each other and be respectful of others' opinions and views.
3. No answer is wrong or right so feel free to share with us your honest views and opinions.

Main Question asked by the Moderator: Please tell me what does integration of HIV PrEP into primary health care services mean to you?

First respondent: It might be to flatten the curve of the infection so the infection rate will be at minimal when we are having this PrEP.

Response from the moderator: In other words, it will reduce the number of new infections if people start getting this PrEP.

Second respondent: It means that staff members in the primary health care facilities must then be trained so that they are equipped to give out the proper information to the community.

Probing question from moderator: From your working experience, what do you think could be done in order to integrate HIV PrEP into primary health care services? What needs to be done so that it can be integrated into our primary health care services?

First respondent: I think on that one, more personnels or should I say professional nurses must be trained so that we are able to give out the PrEP.

Second Respondent: I think also, health education should be given to the clients so that they are well aware of the PrEP that is offered in primary health care services.

Third Respondent: topping up with health education, for instance if there can be some pamphlets like the way they did with the HIV treatment so the information can be more available to them rather than only talking to them one on one so that they can be able to at least to read.

Fourth respondent: I think it is all about health education, the staff members not only the professional nurses from the groundsman out there so that we cascade the information to our family members and the community.

Probing question from moderator: So for this clinic, have we started giving PrEP to people who are coming?

First respondent: Yes, we have started.

Probing question from moderator: So are we giving it with other services or are we giving it separately on its own?

First respondent: we are giving it with other services.

Probing question from moderator: So giving it with other services, what do we have experienced being the stumbling block or hinderances for giving it to our communities?

First respondent: during the line of my work, I have never seen any stumbling blocks when giving this PrEP because the containers are of that art so when a patient the one with PrEP goes out and then maybe she is still fidgeting with the container and then they saw that this one is founding the same container as me which means this one is also HIV positive, we are all taking treatment so somehow I can say it encourages because when I see others taking the same treatment as me then I'll see that it's not only me having this treatment. It encourages the one with HIV infected.

Second Respondent: I can also add on this point that it reduces the stigma that people have around being HIV positive. If they have the information that you can take PrEP for those that are HIV negative to remain being HIV negative it also reduces that stigma around the HIV positive clients so in that case they feel encouraged like she said.

Third Respondent: according to me, what I have realized is that culture somewhere somehow it plays a role like I had a few clients whereby their partner are positive and then they are negative so we will be educating them about the PrEP and then they will be having some doubt to take it. Saying that I am not yet HIV positive, why am I taking this? But we will be trying to make a client aware that we are giving this for you in order to stay HIV negative and then she will be saying that but my husband, we have been sleeping together for more years and he was always on the treatment so I hear that when my husband is on the treatment and then the viral load is down I am not going to get the disease so why PrEP?

Fourth respondent: I would say also, one stumbling block especially for when a patient is coming for other things then you just advise them on the issue of PrEP but having to come back for follow visit for PrEP, there is an issue of standing on long queues so some people have a problem with coming back because now you have to go back to the long queue , that would be number one. Also there is this stigma around HIV that some people will say the medication is making a loud sound, that medication is like a negative connotation because of that so yeah that can be part of the stumbling blocks. Also, one thing I heard from one client was that the reason why they will come then not come for a few months is because the client's partner only comes home once in a while and only when the partner comes then they will get PrEP but if the partner is not coming home then she just stays at home and does not take her PrEP.

Probing question from moderator: so in terms of your workload, does it not impact it? Is it not adding extra work when you have to provide it?

First respondent: No, it does not because it is like those who are taking chronic medication so all of them we will be giving at the same time. Because you will be opening a file just like other patients.

Second Respondent: one other stumbling block is the availability of medication; I think it was two or three weeks back we didn't have stock, so some patients had to be returned because we didn't have any medication in stock.

Probing question from moderator: so if the patient comes in and you don't have any medication, what are you doing with that person?

First respondent: what we did, we had to place an emergency order and then tell the patient to come back or we ask other facilities.

Probing question from moderator: so if we have to give the PrEP here in the clinic, so I understand that you are already giving it to patients, who prescribes it?

First respondent: Professional nurses and doctors

Second Respondent: I think all those who are initiated and the doctor, those who are NIMART trained.

Probing question from moderator: So my interest is that do we on daily basis have a person who is NIMART trained in the clinic or a doctor available?

First respondent: Yes, we do.

Second Respondent: but I think on that note of prescribing, PrEP has its own clinical stationary so somewhere somehow we are struggling not knowing how to fill the form even if you are NIMART trained. PrEP has its own clinical stationary that we use. So I have noticed that the struggle is how to fill the forms.

Moderator emphasized a point: so they are struggling because they have not received the training.

Third respondent: so the only thing that I think will reduce the stigma of ART and PrEP is providing us with the sponge inside the containers so that it can not make a lot of noise because most of the clients even those who are on ART when they come to take their medication they will open and put some tissue just to prevent the container from making a lot of noise. Some come with the plastic packet and transfer it in there because they are saying when they are walking back home, that sound exposes them, so everybody knows that you are taking PrEP.

Moderator emphasized a point: so we are still having that stigma when coming to this.

Probing question from moderator: but are the people aware that when you are talking PrEP, it doesn't mean that you are necessarily HIV positive, it is only taken by people who are HIV negative but with the partners who are HIV positive or people who are engaging into a risky sexual life.

First respondent: yes, they are aware and in that sense, when I am taking that PrEP it is still going to make some noise on the container so it is exposing that my partner is HIV positive so I am not yet ready to tell people about our status, but they will find because of the PrEP.

Respondent: emphasized a point: the stock is very low; we are having problems with the stock.

Question from moderator: Is there anything anyone would like to add?

No response from our participants

Question from moderator: but in general we feel that the nurses are the appropriate people to prescribe medication to our patients?

Overall responses from participants: Yes

Comment from moderator: if there is no further input that you want to make, I would like to thank you for your time and for the input you have made, this is quite helpful.

Overall Summary

Our participants provided us with an overview of what they think the integration of HIV PrEP into primary health care services means to them, which is to flatten the curve of the infection rate so that it may be kept minimal by using HIV PrEP. Participants also stressed the need of providing health education to both staff and patients. Staff members should be trained thoroughly and effectively so that they may provide accurate HIV PrEP information to patients and the public. Not just for the purpose of enlightening patients, but also for clinical purposes, so that they do not struggle with any of the clinical forms that must be completed as part of the process of giving out PrEP.

Participant also provided us with a recommendation that in order to integrate HIV PrEP efficiently into out primary health care services, more professional nurses should be trained. Participants emphasized the need for health education because the community

does not have information about HIV PrEP readily available to them like it was with HIV treatment. There are few stumbling blocks that were noted by the participants. Firstly, patients do not want to wait in long queues especially for their follow up visits. Secondly, the availability of medication is a problem because nurses must return the patients back home which will also lessen the chance of them coming back to take the PrEP. Thirdly, the stumbling block that was highlighted was the sound the medication makes, patients have been complaining about the loud sound it makes, it has had a negative connotation to it. The patients claim that when walking back home, the community will recognize the sound and will automatically know that they are taking PrEP. It was recommended by the nurses that they should be provided with a sponge to prevent the noise. Lastly, it was noted that professional nurses and doctors are the relevant people to prescribe the HIV PrEP to patients